

COAL AGE

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No. 11

Unit vs. Departmental Control

TO properly divide and place authority is a perplexing phase of management. Some successful concerns vest all authority in one man who, as superintendent, is in charge of all phases of the operations. This may be termed the unit plan.

Other concerns, equally as successful, follow a plan of splitting up the various activities. Responsibility for operating the mine is given to one superintendent, engineering to another and new building to another. General camp and housing questions are delegated to a tenement superintendent, while still another party directs all welfare work. All these officials have the same degree of authority and are equally responsible to higher officers for their respective departments.

Which of these plans is the better? It would perhaps be interesting to see the trend of opinion regarding this.

Much can be said for the unit or centralized plan. Its principal weakness in these days of highly specialized activities lies perhaps in giving one man more than he can efficiently do. The man who is put in charge of everything for a big mining concern may not be able to give the requisite thought and study to all sides of his operation. The appearance of too many mining towns is mute but striking evidence of the fact that the superintendent has given far more of his time to getting out coal than he has to improving housing and camp conditions.

On the other hand, the centralized plan of management has some things in its favor: First of all, it is perhaps more economical; certain expensive overhead is saved. The policies of the management can be more easily transmitted through one man. A lot of friction that is always possible between departments is saved. The men themselves are kept more in touch with all phases of operation and can get closer to the seat of power.

CONCERNING the departmental plan a great deal can be said both for and against. Very much in its favor is the good resulting from specialized effort. Taking houses again as an example: If you were to make up a list of companies owning modern mine towns, you would probably find that nearly every one has been born of specialized effort in this direction. The same would be found true of certain physical features, such as the electrical equipment born of the brain power of some electrical engineer; and so on with many other phases of the mining business.

Opposed to this in the operation of the departmental system is the decentralization of authority, the chance for loss from friction which is always likely to arise where there are departments of equal rank rubbing shoulders closely. Perhaps the worst thing that can be said about a too highly departmentalized organization is that men are too apt to acquire the habit of working for their departments rather than for the concern itself. There is also a good deal of opportunity for men to lose touch with the whole machinery of operations, and this may easily progress to the degree that they cannot be promoted to positions carrying a more general executive capacity. This reflects no credit on the department plan of management, for the moment a concern is forced to go outside of itself for new managerial blood it is time to give the rank and file a good shaking up, or to get a "G. M." who is big enough to train men for responsible positions. It is unfair, too, to work men in blind alleys, even if they are called department heads.

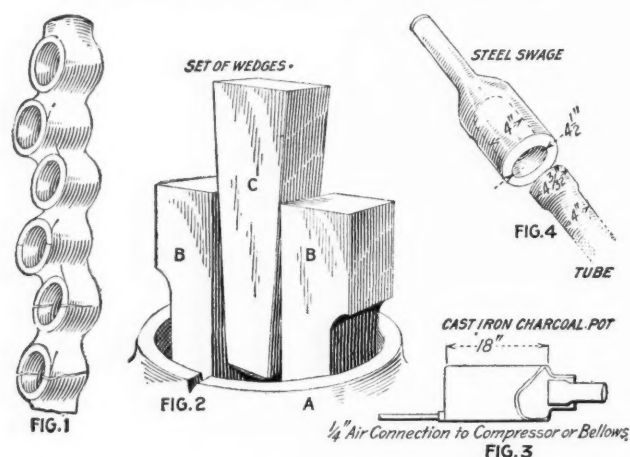
This subject is one that don't easily settle itself. Perhaps the readers of *Coal Age* will be sufficiently interested to present some valuable facts and arguments.

Ideas and Suggestions

Renewing Cast-Iron Headers in B & W Boilers

BY JACK L. BALL
Alliance, Ohio

We are constantly being reminded of the high cost of fuel and the rapidly increasing cost of supplies, labor and the like. It is not only necessary for the engineer of a power plant to economize along the lines men-



FIGS. 1 TO 4. METHOD AND TOOLS FOR BREAKING OFF THE HEADER AND SWAGING DOWN THE TUBES

tioned above, but he must also cut the cost of repairs to a minimum. Any plan that will tend to do away with costly repairs, therefore, should meet with particular favor at this time, and the following is written in the belief that it will prove of practical utility to readers of *Coal Age*.

In a certain boiler plant consisting of several batteries of Babcock & Wilcox boilers, considerable trouble was experienced from the breaking of the cast-iron headers. The boilermaker's bill reached such proportions that it became necessary to devise some means of renewing headers without outside help. The following method is now used in performing this work, and it has proved quite satisfactory:

Fig. 1 shows a nine-tube, vertical, cast-iron header. In case such a header cracks, or is broken, the first thing to do is to free the damaged header from the tubes. Fig. 2 shows a set of wedges used for this purpose. The face of the handhole is nicked deeply, the side wedges put in place and then the wedge C driven in until the header breaks. This method usually, but not always, makes a clean, square break, leaving the tube end free. After all the tubes are clear, the iron around the circulating tube and mud-drum nipple can be broken with a hammer.

Fig. 3 is a cast-iron charcoal burner, 18 in. long and 3 in. in diameter, with a connection for air to a bellows or an air compressor. After a good fire is started in

the burner, the end A is placed over the end of a tube. When the end of the tube is heated to a cherry red, the swage, Fig. 4, is placed over the end and sledged until the tube end is brought to its regular size. The diameter of the hole at the end of the swage is large enough so that the enlarged end of the tube will enter, but is reduced a short distance into the regular size of the tube.

The end of the circulating tube is brought to size the same way. It saves time to use a new mud-drum nipple since the old nipple is usually damaged when removed.

It is good practice to reroll the opposite ends of the tubes that have been subjected to the strain of the sledging, as this sometimes makes them leak.

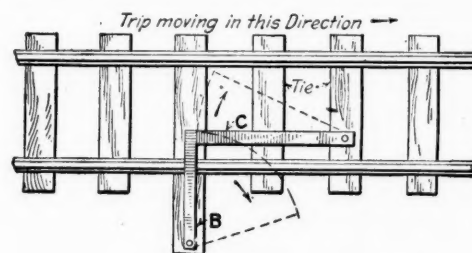
For heating the nine tubes of a header about 30 quarts of charcoal is required. This is much cheaper than replacing new tubes and having the old tubes reended. Also, with a repair outfit of this kind much time is saved.

Improved Safety Car Stop

BY W. R. JONES
Ohiopyle, Penn.

I noticed in *Coal Age*, Aug. 4, 1917, a safety car stop which is very satisfactory when you have a rope or motor on the rear end to pull the trip back far enough to permit the block to swing out when you wish to move the trip forward. I have used a block similar to the one described on a side track, but as it took all the mules to pull the loads back so as to release the block, I changed it.

In the new arrangement everything was left the same as before except block C. This block I had made a little

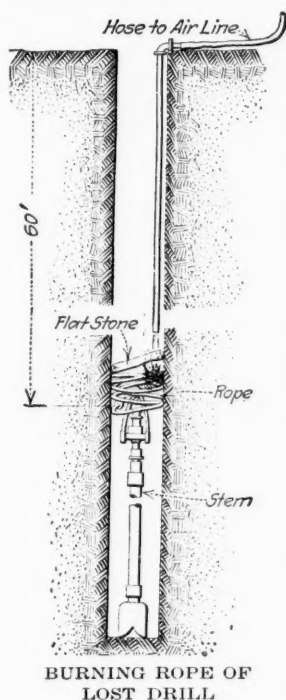


AN IMPROVED SAFETY CAR STOP

longer than in block B and used only one bolt to fasten it. Thus when the loads were against the block B, we can bump block C over toward the other rail, permitting block B to push past block C toward the pit mouth, after which all we need to do is to release the brakes and the trip is ready to move forward.

I would suggest that anyone using the kind of block described in *Coal Age* of Aug. 4 should try the method here suggested. I feel sure the change will be considered an improvement over the other type.

Removing a Rope from a Drill Hole



easily with the tools well drillers use for that purpose.

A novel method of recovering a lost drill stem is described by H. S. Carpenter, of Billmyer, Penn., in *Engineering News-Record*. During operation the drill rope broke when the stem was about 60 ft. down, and a loose flat stone apparently fell right on top of the coiled rope and made it impossible to "spear" it in the usual manner. Kerosene was then poured into the hole, and a piece of $\frac{1}{2}$ -in. pipe, attached to the air line, was lowered over the rope as shown in the sketch. A piece of waste was then ignited, dropped down the hole and the air turned on. The accelerated flame soon burned off the rope, and the stone slipped down beside the stem, the bit being then recovered

modern machinery, and who has been complimenting himself on his own achievements and progressive tendencies—and rightly he does deserve credit; nevertheless, what was up to date yesterday is obsolete today. This much inconvenience is brought about by American ingenuity, and the operator who rests upon his laurels will soon realize that he is mining under a "bad roof" and that precedent is corroding the anticipated success.

The current high prices have to a great extent promoted waste instead of discouraged it. The thought foremost in the operator's mind was to produce in quantity rather than efficiently; but the new measure will call for an inventory of resources and a regeneration of methods, with the result that efficiency and large production will join hands and work toward prosperity under the guidance of economy.

Beyond question coal-mining methods have improved greatly during the last few years, and these improvements alone have made operating possible in the face of the present labor situation; nevertheless, these improvements were made almost entirely in an effort to increase production rather than to promote economy, but insofar as the better equipment is in use it should be operated at the highest efficiency.

Every coal company, therefore, through the sense of patriotic duty, if nothing more, should make a thorough investigation of its methods and conditions and exert every effort to cut waste to a minimum, to the end that every existing mine, in spite of the restriction, will be made to not only maintain production, but to even produce an excess over the present amount. This achievement will not necessitate installing elaborate equipment, it will merely mean the exercising of sound judgment in revising the methods of operating.

One Way in Which To Continue Coal Mining Prosperity

BY C. G. GRABE
Pittsburgh, Penn.

Does the Government regulation of coal prices mean that coal production will be materially decreased? Does it mean that many of the mines which are now operating under less favorable conditions brought about by local elements will have to close shop because of the inability to maintain the present high wage standard in the face of decreased profits, or will they merely strive for existence under the ban of uninteresting and fruitless efforts?

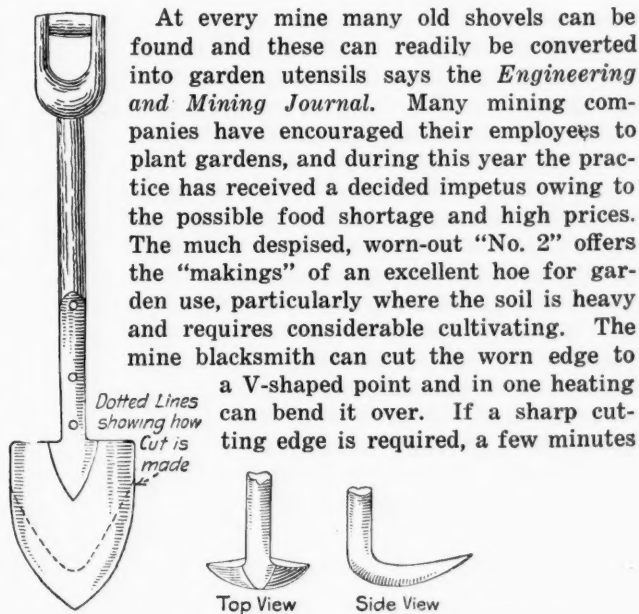
It is true that this regulation will present hardships, for the time being at least, and will also be a case of the "survival of the fittest," but even these facts should not decrease production. They may to a certain extent discourage the development of new properties, but on the other hand all existing properties should as soon as possible rise to the rank of the "fittest," and in this way, instead of decreasing the production, should actually increase it.

Maintaining the coal supply is not only a duty to the immediate interests involved, it is also a patriotic duty and as essential to progress and protection as the continuation of any other industry.

It is obvious that the new standard selling price will in general decrease the profits, and in some instances actually eliminate them, but since the selling price is fixed the only sane method in which to attack the problem is from the cost-of-production side.

At first thought, any endeavor to lower this cost will undoubtedly appear unfeasible and misdirected to the operator who has recently equipped his mine with

A Use for Old Shovels



FARMING IMPLEMENT FROM AN OLD SHOVEL

on a grindstone will suffice, and the carpenter can easily supply a suitable handle. It is best not to attempt tempering, as the steel has a tendency to split, but slight cooling and immersion will secure the desired effect.

Electrical Equipment at Winding Gulf, W. Va.

By C. H. ELSON
Charleston, W. Va.

SYNOPSIS—*The operations here described use a combination of home-generated and purchased power. Costs of each are carefully recorded, checked and compared from month to month.*

THE Winding Gulf Colliery Co., of Winding Gulf, W. Va., operates three mines known respectively as mines Nos. 1, 2 and 3. No. 1 and No. 3 are slope mines, the pit mouths being located several hundred feet apart, while No. 2 is a shaft mine on the opposite side of the mountain. Power is supplied to Nos. 1 and 3 from a power house located between the two. No. 2 purchases alternating current and converts it to direct current by means of rotary converters. The fan for No. 1 is steam driven and for No. 3 electrically driven. The fan at No. 2 is driven by an alternating-current motor. The company has a well-equipped shop with facilities for making coils, rewinding armatures or making any repairs either to the electrical or mechanical equipment. A large supply house is also maintained and every precaution taken to reduce delays arising from breakdowns and shortage of material to a minimum. Mine No. 2 is ventilated by an American

at a speed of 285 r.p.m., requiring not over 90 hp. It is located at an altitude of 2000 ft. above sea level. The fan is driven by a Westinghouse type CS 2200-volt two-speed motor. The location of compensator, disconnecting switches, motor, etc., can be seen in Fig. 2. All wiring is in conduit, for the protection and safety of the operator.

As previously stated, power for No. 2 mine is purchased. This is secured from the Virginian Power Co., 2200-volt, three-phase, 60-cycle alternating current being delivered to the service switch. The alternating current is transformed to 275-volt direct current by means of two 200-kw. rotary converters. The switchboard, shown in Fig. 1, consists of two alternating- and two direct-current panels, also two direct-current feeder panels of two circuits each and one alternating-current lighting panel. Each feeder circuit has its own individual watt-hour meter, and each month readings are taken and a comparison made with the previous month's readings. The all-month efficiency of the rotary converters is calculated and a log sheet made out. Fig. 6 shows an outside view of the substation building, while Fig. 3 shows the arrangement of transformers within.

Particular attention is called to the economy of space and cable, the starting resistance being mounted above the transformers on specially constructed pipe frame-

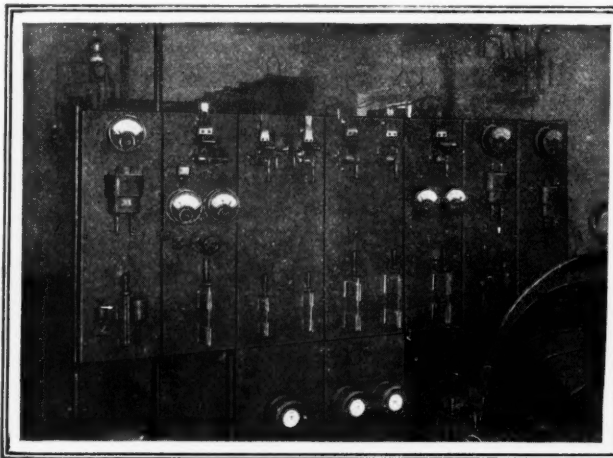


FIG. 1. SWITCHBOARD AT THE WINDING GULF COLLIERY

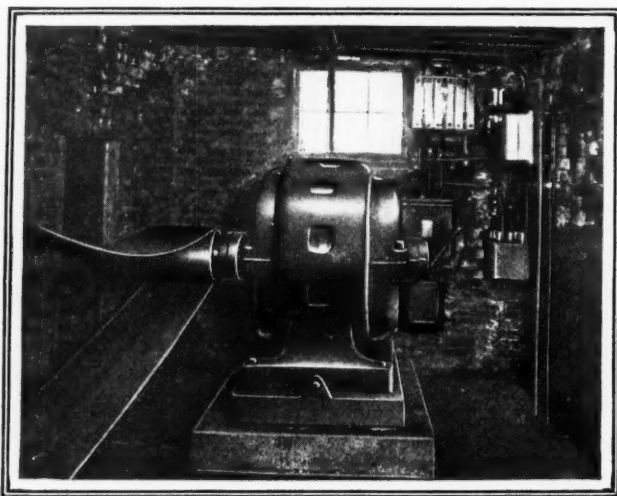


FIG. 2. WESTINGHOUSE MOTOR WHICH DRIVES THE FAN

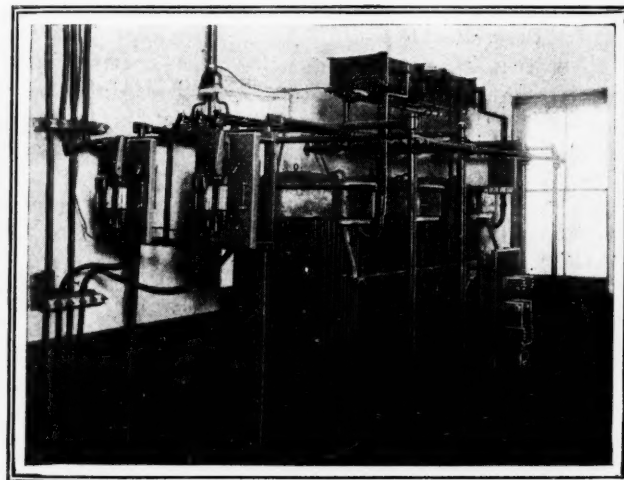


FIG. 3. ARRANGEMENT OF TRANSFORMERS IN SUBSTATION

Blower Co. fan, 78 x 36 in., with 64 narrow blades curved forward in the direction of rotation. This fan delivers 100,000 cu.ft. against a 4-in. water gage when running

work, and the starting switch mounted directly in front of the transformers in a convenient place for the substation attendant. The two automatic reclosing circuit

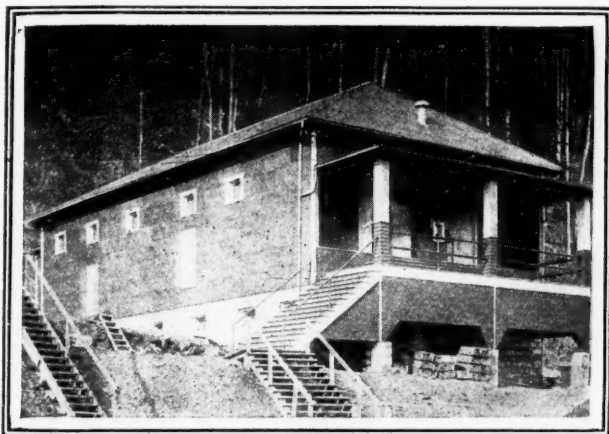


FIG. 4. EXTERIOR OF RECREATION BUILDING

breakers protect two separate and distinct direct-current circuits going to the mine. Fig. 5 shows the headframe for No. 2 tippie. The hoist motor which operates the cages is located in the hoist house, visible at the extreme right of the photograph. The motor is a General Electric Co. 100-hp. direct-current machine and is remote-controlled by an operator stationed in the headframe. All motor and tippie wiring is run in conduit, to protect the attendants as well as to lower fire hazard and thus secure the minimum insurance rates. A thorough inspection is made once a month of all motors, lighting circuits, mining machines, locomotives, pumps and fans, also trolleys and bonding, and a written report submitted to the general manager and superintendent. These reports are transmitted by them to the mine foremen and electricians with the request that a careful analysis thereof be made and any faults or inefficiencies be corrected before the next inspection and report.

Fig. 7 shows the tippie handling the coal from mine No. 1. This is a slope operation, and the car haul is operated by a 125-hp. series-wound direct-current motor. This machine can be controlled from either the top or the bottom of the car haul, but cannot be started from either point until the operator at the other end is ready and has thrown in his switch.

Power for this tippie is supplied from the power house, which is located several hundred feet away. A log sheet is kept on all power delivered to mines Nos. 1 and 3, and this serves as an excellent basis of estimation for a comparison of costs for purchased power.

Each day the locomotives are brought out to the shop and the motorman reports on a blackboard, arranged for the purpose, the condition of his particular machine. The master mechanic makes a careful inspection, also any necessary repairs. The storage-battery locomotives have recently been put in on trial and a log is kept of their performance. The master mechanic records the rate of charge, voltage of cells before and after discharge, the specific gravity of the acid, number of cars gathered and hauled, and the reading of the ampere-hour meter. All pump motors are automatically started, thus eliminating the necessity of a pump attendant starting each motor after the power is discontinued, for any reason whatsoever.

The track bonding and trolley wire are carefully inspected each month to insure against unnecessary loss

of power. Proper arrangement of feeder circuits is watched and the best distribution of power maintained. Automatic signals and a complete system of underground telephones assist in the quick dispatch of trips and decrease lost motion in mine operation. The recreation and education of company employees is carefully cared for. Fig. 4 shows a combination poolroom, moving-picture hall and lecture room. The poolroom is located on the first floor and the moving picture hall and lecture room on the second floor. A partition in the poolroom divides the side for the white from that for the colored people. The lighting of the entire building has been carefully planned. Holophane bowl-type reflectors are used throughout the building, giving an even distribution of light. The circuits in the moving-picture hall are so arranged



FIG. 5. HEADFRAME FOR NO. 2 TIPPLE

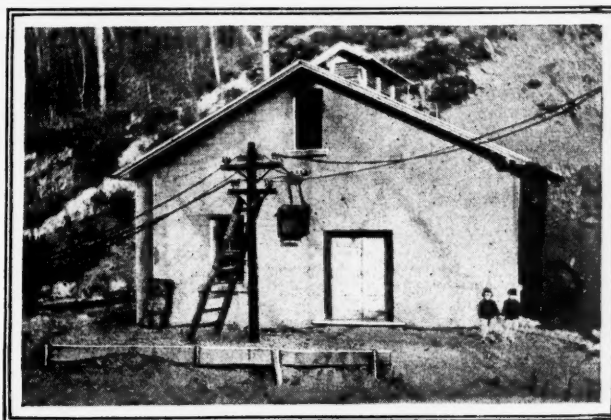


FIG. 6. EXTERIOR VIEW OF SUBSTATION BUILDING

that they can be controlled from either the ticket office or operator's booth. Thus, in case of fire in the operator's booth, the ticket seller can switch on the lights immediately.

The three rows of ceiling lights are on separate circuits. This enables the operator to turn on any one



FIG. 7. TIPPLE THAT HANDLES COAL FROM NO. 1 MINE

or all of the rows, thus securing the proper intensity of light under all conditions. The stage lighting is on a separate circuit and is controlled from behind the scenes. Orchestra lights, footlights and strip light troughs enable the stage electrician to produce the same effects that one finds in the much more elaborate theaters in large cities.

Coal Gas as a Possible Substitute for Gasoline

One of the interesting stories coming over from England contains between the lines a suggestion of possibilities in the way of future development in the utilization of coal gas as a substitute for gasoline in automobiles and motor trucks.

Coal gas is in actual use to some extent in England, according to Hamilton C. Claiborne, who is vice consul at Bradford. Moreover, he says the development of the use of gas for automobiles has passed the experimental stage and has become a practical proposition, and he relates an instance of a motor bus using coal gas having made a journey from London to Eastbourne and return, a total distance of 130 miles.

Furthermore, he says the Grimsby municipality, which operates a system of motor-driven omnibuses to outlying districts, claims to have effected a reduction in fuel cost by the use of coal gas. In this instance the report states that gasoline was selling at 61c. per gal. and coal gas for 61c. per thousand feet.

So far as using the gas in the motors is concerned, it is said that the only change necessary is the fitting of a butterfly valve in the air-intake pipe for the regulation of the air supply. It is further claimed that there are distinct advantages in using the coal gas because the engine keeps cleaner and the valves do not require grinding so often.

The question of future development in this line on any broad scale seems to hinge largely on the practicability of compressing the gas and providing means for its transportation. In various parts of England where coal gas has been used, a relatively cheap but clumsy apparatus has been adopted for temporary use. It is said to consist of a canvas bag with an inner layer of

rubber, shaped like a mattress, which is filled with gas drawn from the main and strapped to the top of the motor bus or to the rear of the automobile. The gas in the bag is connected with the induction pipe and the engine is worked by a suction process in much the same manner as the ordinary gasoline-vapor induction is manipulated.

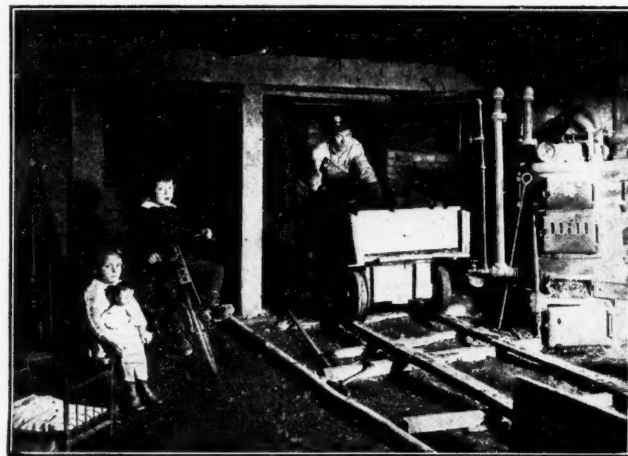
It is pointed out that the bulkiness of these containers is an objection, and constitutes the main difficulty in the use of gas. For this reason it has not proved satisfactory so far to use the coal gas for small cars. It is thought, however, that a suitable cylinder for containing compressed gas will soon be provided, and the future prospects in this line will depend materially upon the success of compressing a supply into a bulk that can be carried on a machine.

Should it prove practical to compress coal gas as a substitute for gasoline with a saving, there is a chance that we may have here not only a future rival for gasoline, but an industry that will be one of importance to the coal interests of the country.

Coal Mine in a Cellar

Henry M. Bandy, a lawyer of Norton, in the southwestern part of Virginia, found a coal mine in his cellar recently, and he is getting all the coal he wants, and expects to be getting it for the rest of his life, at the ridiculously low price of 30c. a ton.

One day last winter Mr. Bandy hired a laborer to enlarge his cellar, as his two children used the place as a playground when the weather was inclement. While digging in the rear of the cellar, the laborer came across some bloom and a few stray pieces of coal. Upon digging further, he discovered that he had encountered a deep vein of bituminous coal of high calorific value. It did not take Mr. Bandy a long time to arrive at the



COAL MINE AND PLAYGROUND COMBINED

conclusion that he was in a fair way of becoming practically independent of the coal market, and he immediately set about developing his "mine."

Mr. Bandy now employs a miner twice a year, the latter coming for two days at a time, during which interval he mines about 20 tons of coal. Forty tons a year are ample for Mr. Bandy's needs, and he is not at all worried about the coal situation.

Location and Construction of Mine Tracks—VIII

By J. McCRYSTLE

Minersville, Penn.

SYNOPSIS—*Most railroads have standard rules that trackmen are required to follow. It is wise to adopt similar rules for the construction and maintenance of industrial tracks. A model for such a book of rules is here appended.*

WHEN the site for either the frog or switch has been decided, the rest of the turnout location can be taken from standard plan. Within certain limits it will be often found advisable to place the frog at the nearest rail joint, taking care, however, that the switch points do not also come at a rail joint.

If no standards are available the location of the point of either the frog or switch should be determined. The other point can then be moved along the rail, at all times keeping it in position until the tangent distance from the point of frog to the point of intersection of the line of frog and switch will equal the distance from the point of intersection to the heel of the switch.

Referring to Fig. 20, (p. 406, Sept. 8 issue), either the frog or switch must be shifted until the distance T equals the distance T' . This plan is applicable, whether the frog is on a curve or a tangent.

While an experienced trackman will usually be able to lay a fair turnout under varying conditions, this cannot always be depended upon. Particularly in the case of a new trackman, some governing and easily learned rules should be given.

If it is found in laying a switch point off a curve that there will not be sufficient clearance at the heel of the switch and the adjacent rail as may occur in turning off the inside of a curve, it is well to leave a sufficient distance on the lead or middle rail unspiked so that when the switch is set for either track sufficient clearance will be obtained.

The switch points are sometimes bent, to accommodate this clearance, but this expedient for light rail frequently results in having the points break after a little wear at the place where the rail bender has been applied.

LADDER TRACKS

A ladder track is one from which a number of parallel tracks branch, the frogs being located at intervals, dependent upon the centers required between tracks and the frog number used. In Fig. 23, (p. 407, Sept. 8 issue), A is the ladder track, and B, C and D are the branches.

The distance required between frog points is found by dividing the distance desired between track centers by the sine of the frog angle. The ladder track should be on an angle to the main tracks, equal to the frog angle to be used.

The ladder track makes a better and more symmetrical layout where several turnout tracks are to be laid, than having each turnout track branch off the one adjacent, the usual method used around mines.

It is obvious that in order to secure any high degree of perfection in the standardization and installation of track it will be imperative to have definite instructions and plans to govern and guide the workman in its construction.

The instructions should be concise and easily understood; the routine work should be covered fully; and the duties of the trackman, and those indirectly concerned, clearly specified. This will preclude any evasion of responsibility; and, on the other hand, by prescribing the course to be pursued under different conditions, remove to a great extent the burden of decision from the workman. This policy will help to develop more quickly young and inexperienced trackmen and tend to conserve material and time with the more efficient. Able trackmen are not produced over night, and there is a vast waste of time and many inferior layouts made before any great proficiency is acquired.

Those concerned in any way with the track installation and the preliminary work on which it is to a great extent dependent, should be furnished with copies of the rules, plans and all information in reference to them, and care taken to insure that they are thoroughly familiar with these instructions. It will be conceded that more efficient and uniform results will be obtained if such a course is pursued than if the workmen are all left to depend upon their own judgment.

The engineering department should lay out the work in a manner that will utilize the standard equipment supplied to the trackman. The curves should be of a radius to correspond to the regulation frog to be used, so that the turnout can be installed with the frog fitting the curve and requiring no compromising in its installation. To do this, a radius that will be tangent to the end of the frog that joins the curve, and at the same time conform to the portion between the switch and the frog, should be used.

The mine foreman, or his assistants, should see that their work is symmetrical and conforms to the plans. A failure on the part of either will compel a distortion of the trackwork.

The following book of rules is here given as a skeleton or model around which the many rules demanded by local conditions can be built. This plan is an adaptation of the practice of many standard-gage roads that regulate their maintenance-of-way employees with instructions governing their various duties. Some of the rules have been carried to a refinement which it is realized will be impossible to obtain in actual practice; however, they furnish a standard which experience will determine how close it is required to approach.

The underlying reason for the rules should be explained to those concerned, and meetings held at intervals where any suggestions or revisions can be discussed. This policy will instill enthusiasm and a spirit of rivalry among the trackmen, which if fostered should be productive of the most beneficial results.

It may be pertinent to state here that, to produce the most efficient transportation, careful attention must be likewise given to improving the running parts of the rolling stock, so that the results to be expected from well-installed track may not be nullified by poor cars.

There are many ways of performing almost any task. Scientific management (so-called) has shown the advantages to be derived in selecting and perfecting one method and performing in their logical sequence the various operations involved.

The factors or mathematics which determine the following rules will be found in the preceding articles.

In conclusion I would say that even though the best practice may not be achieved in the first set of rules, an inferior practice well carried out will accomplish more than a good system indifferently followed.

(A) GENERAL RULES

1. The foreman of each colliery must supply copies of these rules and standards to the trackmen and repairmen; and the assistant foreman must enforce obedience to them and report to the district superintendent all violations and the action taken thereon. Every employee with duties in any way prescribed by these rules must be conversant with them.

2. The fact that any person enters or remains in the service of the company will be considered assurance of willingness to obey its rules.

3. In the event of any doubt as to the meaning of any plan, or if additional data is required, application should be made to the _____.

4. Meetings will be held at least once every three months by the _____, where a review will be taken of the various rules, and suggestions for alterations, improvements or additions to the existing standards received.

5. Safety is of prime importance in the performance of any duty; every precaution must be taken to avoid accident to the workmen themselves or others.

6. Workmen are responsible for the care and condition of their tools.

7. All work must be left in a safe condition.

8. Any work that interferes with the safe passage of trips at their normal speed is an obstruction, and except in emergencies should be attempted only after working hours.

9. Material must not be piled along the sides of haulageways.

10. Only such an amount of material must be stored inside as is required for immediate use, and care must be taken to place this so as to permit free passage on the ditch side of the gangway.

11. Tools and special material must be kept under lock and key and not given out or loaned without proper authority.

(B) ROADBED

1. The roadbed on all new work, or wherever roadbed is renewed, should conform to the standard plan.

2. The drainage ditch should be driven full width and depth at the same time as the heading or tunnel, and maintained clear by the party driving same within 25 ft. of the face.

3. The _____ will determine what material shall be used for roadbed, and see that same is adhered to. Ballast is graded as follows: (1) Broken stone, excellent. (2) Ashes, good. (3) Breaker slate, fair. (4) Coal and refuse, poor.

4. Where rock is used for ballast, it must be broken to a size that will pass through a 2½-in. ring.

5. All main haulage roads should have at least two inches of ballast beneath the tie, wherever possible.

(C) TIES

1. Ties must be laid 16 to a 30-ft. rail and 18 to a 33-ft. rail. They must be placed at right angles to the rail and properly and evenly spaced.

2. Whether or not ties are of uniform lengths, the ends of the ties on the ditch side of the track should be maintained at an even distance from the rail.

¹Where blanks occur in these rules they should be filled with the title of the proper official, or necessary data, in this case probably the division engineer.

3. Selected ties should be used on all main haulageways.

4. The standard square ties in graded lengths, conforming with both the turnout and main tracks, should be used at all turnouts and switches.

5. Joint ties should be selected and should be as near as possible the same size.

6. When a spike is drawn from a tie, the hole should be plugged before a spike is again driven in this tie.

7. As ties become unfit for service, they should be removed in the manner known as "spotting" and not in continuous sections.

8. Ties removed that cannot be used for any other purpose should be loaded and taken out of the mine at once.

9. All ties must be well tamped and particular attention given to tamping under the rail.

10. On account of drainage and tamping considerations, the practice known as corduroying—that is, inserting new ties between those partially rotted without removing the rotten ties—must not be employed except in cases where mule haulage only is in service.

11. Steel ties alone should only be used in locations where the roof is low and no acid water abounds.

12. Where fishplates are used, a selected tie should be placed directly under the rail joint.

13. Where angle bars are employed, the rail joint should be suspended with a selected tie under the angle bar on each side of the joint so as to give the angle bar a good and sufficient bearing.

14. Ties not up to specifications should not be laid until the foreman's attention has been called to them and his instructions received.

15. Tie Specifications:

a. Mine ties, — ft. long, must be first-class sound timber and stock well manufactured, not less than — nor over — in. thick, with not less than — in. faces at small end. Such ties may be of either oak, chestnut, hemlock, ash, soft maple, ironwood, locust, hickory or pitch pine. They may be hewed or sawed on two parallel faces.

b. Outside ties, — ft. long, must be first-class sound timber and stock well manufactured, — to — in. thick, with not less than — in. faces at small end, and be of either oak, chestnut, locust or pitch pine, and hewed or sawed on two parallel faces.

c. Notched ties, — ft. long, must be not less than — in. in diameter under bark at small end, and of the same kinds of timber as (a) mine ties.

16. (a) Mine ties (a) should be used for general work inside. (b) Ties 6½ ft. long should be used for outside work. (c) Notched ties may be used only for chamber work where wood rail is in service.

(D) RAIL AND SPIKES

1. Rails must be laid with broken joints; that is, the joints of one line should be as nearly opposite as is practicable the centers of the rails on the opposite line.

2. Short rails are only advisable for temporary work. No rail under 10 ft. in length is permitted on main-haulage roads.

3. Rails must be spiked in full and each spike driven home perpendicularly with full hold on the rail. The last blow should be a light one, to avoid breaking the spike under the head.

4. The _____ shall see that not more than enough spikes to last — days are given out at one time to any workman.

5. Spikes should be staggered; that is, the outside spikes of both rails must be toward the same side of the tie and the inside spikes toward the opposite side.

6. Rails should be laid true to gage. No deviation from this rule may be made except on curves as shown.

7. The gage on all curves whose radius is less than — ft. should be widened 1 inch.

The gage on all curves whose radius is 200 ft. should be widened — in. for — gage; for 250-ft. gage should be — in.; for 300-ft. gage should be — in., etc.

8. On straight track both rails must be on the same level, except on approaches to curves, where the proper elevation must be given the outer rail.

9. The superelevation for the outer rail for maximum speed allowed must be:

	Gage	
	Underground In.	On the Surface In.
For a 30-ft. radius curve.....
For a 40-ft. radius curve.....
For a 50-ft. radius curve.....
For a 60-ft. radius curve.....
For a 80-ft. radius curve.....
For a 100-ft. radius curve.....
For a 150-ft. radius curve.....
For a 200-ft. radius curve.....

10. The track level should be tested frequently and always used when surfacing track.

11. (a) — lb. rail shall be the lightest rail laid and be used only for buggy work. (b) — lb. rail shall be the lightest rail used where the regular mine cars run. (c) — lb. rail shall be the lightest rail used where locomotive haulage is employed. (d) — to — lb. rail may be used on main-haulage roads, and for heavy outside traffic by special arrangement.

12. "Dead" steel rail—that is, old rail unfit for regular haulage—shall be used wherever possible for chamber work.

13. Wood rail shall be used only for heavy pitching chambers and slants where the "dead" rail cannot be utilized.

14. Wood rail not conforming to specifications should not be used until the foreman's attention has been called to its defects and his permission to lay it obtained.

15. Specifications for wood rail: Wood rail should be first-class sound timber and stock well manufactured and sawed — by — in. and in — to — ft. lengths; it must be square edged and sound, of beech, birch, maple, oak or ash.

16. Steel rail must not be dropped from the sides of railroad cars.

17. The size of spikes should be for — ft. ties — inches.

18. The size of spikes should be for — ties — inches.

19. The track gage must be placed square with the track, and the rail held tight against it, until the spikes are driven.

20. The locomotive engineer or driver shall report the location of any poor roadbed, and all derailments and the cause thereof to the —.

21. Spikes in abandoned ties or track must be reclaimed by —.

(E) CURVES

1. Lines will be given by the engineers for all tunnels and rock curves, and no tunnel or curve shall be started without such a line.

2. It is the duty of the mine foreman to see that all lines are rigidly adhered to.

3. A — ft. radius curve is the minimum curve allowed.

4. When curves are necessary in following the irregularities of a bed, the curve offset for a — chord should not be greater than — feet.

(F) ANGLE BARS, TIEPLATES AND RAIL BRACES

1. All rail 25 lb. or over should be laid with joint fastenings.

2. All rail joints where mechanical haulage is in service should be laid with angle bars.

3. All joint fastenings must be applied with the full number of bolts, washers and nuts, screwed up and kept tight.

4. The ties at joint fastenings should be laid as indicated in Rules C 13 and C 14.

5. Where heavy locomotives are in service and the flange of the rail cuts the tie, requiring frequent notching, tieplates may be used by permission of the —.

6. Tieplates may be used where the traffic wears out the flange of the rail before the head has given full service, and where the rail cuts the spikes by applying to the —.

7. Rail braces may be used on curves where the gage is hard to maintain by applying to the —.

8. Rail braces, when used, should be applied to both rails.

9. Rail braces must not be applied where tie plates are used.

(G) FROGS AND SWITCHES

1. A No. — — cast frog shall be used on all new chamber switches of — lb. rail.

2. A No. — — builtup frog shall be used on all new chamber switches of — lb. rail or over.

3. A No. — — frog shall be used for general use.

4. A No. — — frog may be used in cases where the traffic is fast and heavy.

5. A No. — — frog may be used outside by special arrangement where the locomotives are large and the traffic is unusually fast and heavy.

6. A — ft. tongue switch should be used with the cast frog.

7. A — ft. split switch should be used with the No. — and No. — builtup frogs.

8. A — ft. split switch should be used with the No. — and No. — frogs.

9. Frogs inside the mine must be placed to conform to the ribs of the curve and not the nearest rail joint.

10. The lead of a frog to be located on a curve should be the same as the number of frog adopted calls for—that is, no difference should be made in the lead whether the turnout is off a tangent or a curve.

11. When the frog is located on a curve, the sum of the degree of curve of the main track and the degree of curve corresponding to the frog should not exceed — deg. The degree of curve of the main track may be found by measuring the ordinate of a 10-ft. chord and referring to Table —, page —. The degree of curve corresponding to the turnout radius may also be taken from the same table.

12. The rails connecting the frog and the heel of the switches should conform to the length shown on the standard layout drawings. One rail should be bent to the required radius and both should be drilled, and a supply kept constantly in stock.

13. The distance from the switch to the frog must agree with the standards, so as to make the connecting rails interchangeable.

14. Where possible, the switch lever should be placed on the ditch side of the gangway, or heading.

15. Switch stands must be used at all switches where mechanical haulage is employed.

16. The switch with spring should be used at all main switches; for general use, the type without the spring must be employed.

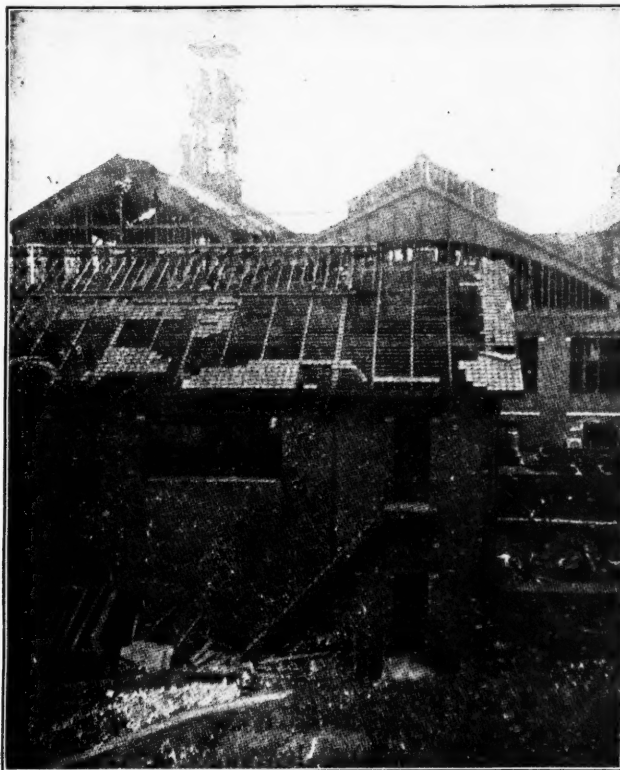
17. The switch and spring must be kept clean and well oiled.

18. When a turnout is to be laid, a complete set of material should be delivered to the proper location in ample time.

19. Bills of material for each turnout design used are as follows:

French Mines in Ruins

One of the great conflicts of the present war is being waged for the possession of the vast coal fields in and about Lens, France, an illustration of what has happened to one of the mines at Sains-en-Gohelle being shown



RUINED MINE AT SAINS-EN-GOHELLE, FRANCE

above. It is this country that Germany is determined to retain, regardless of the cost in lives, and it is here that the pressure of the Canadian and allied forces under Sir Douglas Haig is growing ever stronger.

Observations on Sinking Pumps

By J. F. KELLOCK BROWN
Montreal, Que., Canada.

SYNOPSIS—From a varied experience in the use of sinking pumps the author points out some of the shortcomings in their design. The subject is treated entirely from the viewpoint of the user of sinking pumps. It might be impossible to design a pump to overcome all the objections mentioned, but several pertinent suggestions and remedies are given.

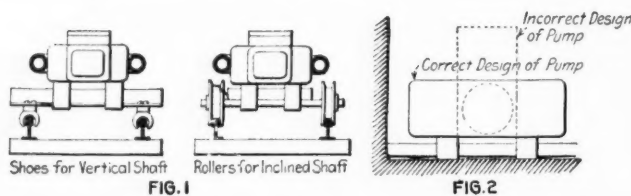
THE following notes are the outcome of considerable practical experience with many sinking pumps operated under a variety of conditions. They are written from the viewpoint of the man who has had to handle this class of plant on the ground, and for that reason they will in all probability not be gratifying to the pump maker. There may be all sorts of mechanical disadvantages in connection with some of the ideas brought forward, but I have hardly ever handled a sinking pump without wishing that I had a pump designer standing in the pouring wet shaft beside me.

There are undoubtedly many sinking pumps that are excellent machines mechanically; that is, under ideal conditions they do their work with satisfaction and some perfection, but put to the test under adverse con-

ditions, the rope, into the shaft, while congratulations are rife if no further damage is done, which would be a miracle. Should the pump, however, prove too heavy for the hoist, the work is at a standstill until someone takes a 40-mile journey out to the nearest station and waits there a week for a single block of sufficient size to take the hoisting rope without damaging it through bending round too small a radius. Makers of course contend that the provision of such a block for an emergency of this nature has nothing to do with the design of the pump. To this contention I agree, but I might add that it would aid their sales if they would confer with their customers and find out the conditions under which the pump is to be used, the size of the hoist, and if too small, recommend and provide such a block ready made to assist in the work, thus insuring good results.

DIFFICULTIES IN GETTING THE PUMP DOWN THE SHAFT

Having raised the pump either by sheer lift or by dividing the load between the headframe and the hoist, it is swung clear in the shaft, swaying about from side to side. All parties make a grab at it to steady it, and one man is saved from falling down the shaft by the slack of his pants. Down it goes slowly, while a few of the more venturesome follow it cautiously down the ladderway. If the shaft is sunk at a slight inclination, one corner of the pump sooner or later catches on the walls, and the pump rolls over and smashes part of the ladderway, if it does nothing else. The damage having been repaired, pinch bars are brought down to roll the pump over again. Some engineer who passed his examinations in brilliant style, in order to get what he thinks is a good leverage, inserts the end of his bar between the pump casing, or waist piece, and the piston rod. Not quite satisfied with the power he is exerting, he sits down on the ladderway and shoves with his feet against the end of the bar. United energy turns the pump, and the aforesaid engineer sustains an unexpected descent and is only rescued by quick work on the part of someone else. In the resultant effort the pump rolls completely over the other way, and the outstanding pinch bar takes another workman below the knee, laming him for a week. On perhaps the third attempt in the confined space, the pump rights itself and an examination in the half-light available discloses the fact that the piston rod looks somewhat the worse for usage, and the pump has to go to the surface for overhauling, which cannot be done in the shaft. And so the work goes on with a great waste of time and expenditure of effort, partly through ignorant labor and lack of proper directive knowledge, but mainly because there is no simple, easy system of getting sinking pumps up and down a shaft. These pumps have to be taken up and sent down many times because there is something wrong with them, and although the labor force improves with practice, the operation of hoisting and lowering is always troublesome and often dangerous.



FIGS. 1 AND 2. ARRANGEMENTS FOR PUMPS IN SHAFTS

ditions, which usually appear in shaft-sinking work, where water is troublesome and the going bad, there nearly always appears about the pump some point that is capable of improvement. In other words, it would seem that designers have paid sufficient attention to the proper design of the pump itself, but not enough to the general conditions under which it has to work.

First, consider the handling of the pump in vertical shaft-sinking, in which heavy water is encountered, and which may not or not require heavy timber. Getting a small sinking pump down a shaft of this type is an operation that absorbs the energies of the entire force. The pump has to be hauled over the ground on skids, lifted by main force upon the platform at the shaft collar and the hoisting rope attached. If the hoist is too small for the work, trouble begins with the failure to lift the pump. Perhaps the hoistman thinks he will take a running jump at it, so he gets a good head of steam, uses a little slack, and does enough to jerk one end of the pump off the platform. This more than likely causes it to swing round suddenly and erratically; everybody gets out of the way to avoid smashed feet, and the pump swings with a jerk and a jar on

Some makers think they provide against the cause of these difficulties by supplying skids beneath the pump. They are made of wood, however, and the effort expended in trying to overcome the friction of wet wood-slides against wet wooden barring or close timbering that is not exactly flush is greater than any advantage that is gained. There is also little benefit, except that it protects the under side of the pump where there are rock walls whose projections would otherwise catch first one side and then the other, causing the pump to tilt easily and roll over. In a vertical shaft these troubles are not so great, but the dangers from swinging and twisting are increased.

RUNWAYS SHOULD BE PROVIDED

To overcome these difficulties, is it not possible for pump makers to provide a simple runway of small rails, built in short sections capable of being extended and driven into position by a wedge? On this would run a rectangular carriage bolted to the pump, the gage being wider than the pump. Before taking down the pump, this runway would be spiked to the timbers and a length left below, projecting into the water. On being raised, the carriage and the pump attached to it would be placed on this runway, and it could then be slowly and steadily slid into position. As the carriage would be broader than the pump, there would be no tendency to overturn. In this manner a sinking pump could be raised and lowered with a maximum of ease and without a great waste of time. In the vertical, or nearly vertical, shaft the small wheels of the carriage could be replaced by guide shoes, as shown in Fig. 1. The slight sacrifice made in space, which need not be more than a few inches, is more than offset by the greater ease in handling. There is no disputing the fact that a sinking pump has to be raised and lowered in shaft work from a variety of causes—in firing shots, for breakdowns, changing suction hose, changing pipes, timbering—and in a confined space with a constant stream of water pouring down, the slowness of the work is exasperating. Pump makers have eliminated a great many of the troubles of faulty design of the past, and if they would now turn their attention to the provision of some easy means of raising and lowering, many mining men would be thankful.

Perhaps the next point that calls for consideration is the shape and balance of the pump. By shape, is meant the relation of the width of the base and the depth through the pump. To get easy handling, the base should be greater than the depth at any section of the pump, as shown in Fig. 2. If this is not the case, the pump is easily tilted and rolled over. There are a few sinking pumps on the market that are irregular in this respect, some part or other jutting out beyond the line of the center of gravity, causing the pump to be more susceptible to twisting and rolling over to that side. A pump with a broad base means stability and is not so dangerous to handle.

ALL OPENINGS SHOULD BE ON ONE SIDE OF PUMP

This brings us to other points in the design of sinking pumps. Every door, and every set of bolts on the pump, holding the door of the water chest and of the steam and valve chest, should be on the side of the pump toward the center of the shaft. A pump so

built that the water door faces one way and the steam chest another way, at right angles to it, is storing up trouble for itself as soon as conditions require the pump to go into a corner of the shaft. A pump of this awkward design must be shifted from its position every time something has to be examined inside or the valves cleaned. Moreover, it is easier to have a man who has to stand on awkward footing, work at bolt heads in front of him rather than stretch around corners after them.

The next point concerns the pipe connections for inlets and outlets. These commonly are placed at right angles to the length of the pump. This arrangement not only causes an abrupt right angle bend, but also gives rise to troubles from another source. In order to minimize time lost in the shaft and to do as much work as possible on the surface where conditions are more favorable, short lengths of pipe or nipples of the proper size are inserted in the exhaust, steam, and discharge outlets, before the pump goes down. But in lowering the pump these nipples are often broken off within the thread of the casing, which causes much trouble in taking the broken parts out. The alternative of putting together these nipples, elbows, and unions (all from awkward position in the shaft) is a slow and troublesome task. Unless the men are familiar with the work, it necessitates much running up and down to get the proper sizes, loss of others in the sump below, perhaps accompanied by some wrenches that can ill be spared. There is surely no mechanical objections to designing a pump in such a manner that the pipes enter and leave parallel with the length of the pump. This would not only make the pump easier to handle in itself, but it would also facilitate the attachment of the pipe lengths. Again, is there not such a thing as a good reliable tight swivel joint that could be profitably used on all these pipe lines and placed on the pump on the top of the short entrance piece? As already stated, the pump and the piping cannot always be maintained in a parallel line, and it is always difficult to make the pipes come near to their proper positions on the pump. A joint that would permit play at this point would tend to make the handling of the sinking pump quicker. Unless one has stood in a shaft in which the water is rising steadily and fast, he cannot appreciate how anything that would aid speedy work is to be so desired.

PUT FOLDING STEPS ON BOTTOM OF PUMP

A sinking pump is usually placed in a corner out of the way of the ladder and bucket run. This may require a staging over to the pump on which a man can stand while working. Usually when a breakdown does occur, it is found that this has yet to be done, and all the time the staging is being built the water is rising and driving the men away from their work. Is it not possible to have two folding steps attached to the foot of the pump. On which a timberman or pumpman could stand, as shown in Fig. 3. If in addition he had a strap passed round his waist and hooked to some part of the pump or to some special hook provided on the pump, he would be in the most natural position to work at the most troublesome part of the pump (the water chest), would have both his hand free and would be independent of a staging that

would have to be put in every time the pump was lowered.

The rods by which a sinking pump is suspended should be adjustable, so that the pump may hang vertically or be made to lean either in or out at the foot as required, as shown in Fig. 3. There are many occasions when a pump that hangs away from the shaft wall at the bottom is much easier to get into position than one that is apt to dig its nose into every spike and rock projection on the way down. There should be little difficulty about this.

Then there arises the question of stud-bolts versus machine bolts and nuts, and despite difficulties of design and the additional weight that has to be added to get this, the machine bolts are preferable. Everyone knows the condition of the pump which has its water-chest cover or steam-chest cover held in position by two stud-bolts while the rest have worked loose or been broken off short. A pumpman working with such a machine faces disaster every day, because there is no way of remedying the trouble except by sending the whole pump, or half of it, to the nearest machine shop, often many miles away. If machine bolts had been used, it would have been easy to stock a few sizes and replace them when broken or lost down the shaft. The use of stud and machine bolts are shown on the right of Fig. 3. These same reasons make it advisable to have the nuts, single or double, holding the plunger to the continuation of the connecting-rod and the piston to the piston rod, replaced by keys.

Nuts strip under hard usage, get lost and cannot be replaced or made on the ground, while at a pinch a key can be made that will temporarily answer the purpose.

A plunger should not be threaded to the piston-rod continuation, but this should pass through the plunger. This has to be a water-tight connection or some day the plunger will be found split from a "freeze." The piston, piston rod and plunger must pull through the pump when the top cover is removed, and if designers would set their wits to devising means whereby some hold could be got on this piston and the rod, at the top, so that it could be hoisted from the pump if need be, they would be doing a favor to pumpmen. Such an arrangement would be a great deal better than the present practice of having a man driving the ram end with a billet of wood and a sledge hammer.

Pumps that are all arms and legs, levers and projecting arms are not suited for shaft work. These things get smashed, bent and broken too easily, but at the same time some arrangement of a bypass from discharge

column to suction column is certainly handy. On the discharge column a valve immediately above the pump—a clack valve which will hold up the column of water—is useful, but it would be more useful still if some of the water in the discharge column could be utilized for flushing the water chamber and its valves under proper regulation.

HAVE OPENINGS LARGE ENOUGH TO GET HANDS IN

One sometimes wonders why it is that pump makers make the entrance to the water chest and the steam chest, or the steam-valve chest, so small that a man's hand can't get properly inside. This is especially true of the valve chamber in the water chest, which is apparently designed to admit a small, ladylike hand and not that of an average burly miner, who is lucky if he can get two fingers through with which to extract a piece of rock or other foreign matter that is interfering with the proper working of the pump.

The question of screwed-in valve seats compared with pressed-in and keyed seats is perhaps more for the designer to settle than the pump user, but the viewpoint of the man who has to run the pump should not be ignored. In general, seats that are pressed in are more easily removed, replaced, and in case of great necessity temporarily repaired by crude appliances on the site of the actual work, than is the screwed seat. Owing to rusting and other water effects, a threaded seat has most frequently to be cut out with hammer and chisel, an operation which under careless hands may destroy the corresponding thread in the casing and result in the whole pump being sent to the shop, to get rebored and rethreaded and finally ending up with valve seats of assorted sizes.

No doubt pump makers will despise these suggestions as being crude and at variance with good mechanical design and as being the cry of a crank on sinking pumps. But before they are finally dismissed one way or the other, let it be said that they are the results of some bitterly gained experience, of much standing in rubber boots on the water chest of the pumps, in oilskins and hat, with a hot steam exhaust enveloping the pump, and operating under conditions where to make any headway on the water, the change from an upper lift to a lower one had to be made speedily. —*Engineering and Mining Journal*.

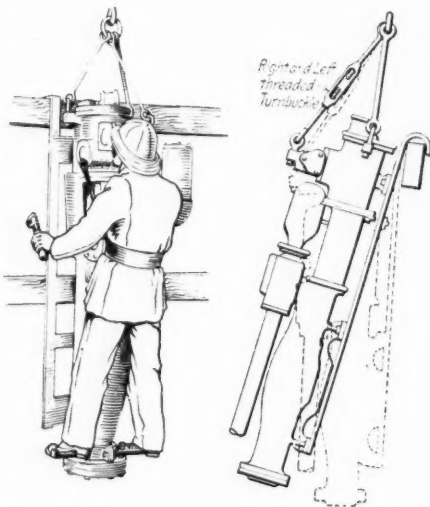
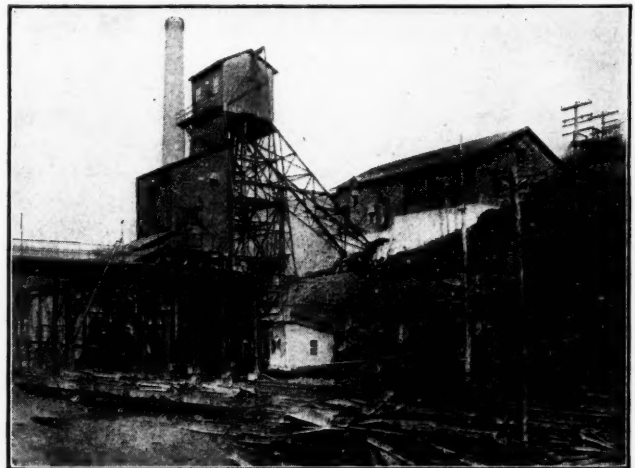


FIG. 3. SINKING-PUMP INSTALLATION



NEW RIVER AND POCAHONTAS COAL CO.'S TIPPLE AT HAVACO, W. VA.

New Coal Prices Seriously Affect West Virginia

Samuel B. Montgomery, state labor commissioner of West Virginia, in commenting recently on the coal prices set for that state, asserted that the naked result of the reduction in price would work incalculable loss to West Virginia, without compensatory results. Basing his estimation upon the topmost price of \$2 a ton, Mr. Montgomery stated that the reduction by the Government figured on the past year's tonnage in West Virginia would mean a loss in round figures of \$100,000,000. Carrying his figures farther, this would mean a loss of approximately \$66.33 for each person, assuming the population of West Virginia to be 1,500,000 people.

Mr. Montgomery insists that the Government was in error because it based the selling price at the mines on data that it had taken months to collect, after which weeks were spent by an accountant in checking up costs of production last year and at the beginning of the present year, when as a matter of fact the tonnage cost advanced as much as twenty cents a ton in one month.

Future results, believes Mr. Montgomery, will be the demoralization of the coal trade generally. F.o.b. coal is now costing many large operators \$1.50 to \$1.60 a ton as a result of repeated wage increases and unheard-of advances in the cost of mine equipment, he states, and instances the following examples: Spikes jumped from \$4.50 to \$20.80 per keg; the prices of steel rails formerly varied between \$28 and \$41 a ton, today we are paying \$79 for second-hand rails and \$179 a ton at the mill; electric locomotives which two years ago sold for \$1800, now sell for \$4100, and it is hard to buy heavy locomotives at any price; mine cars that cost \$48 the first of the year are now hard to get at \$165; and mine props, ties and other material in everyday use have advanced in proportion.

Says Coal Prices Are Unjust

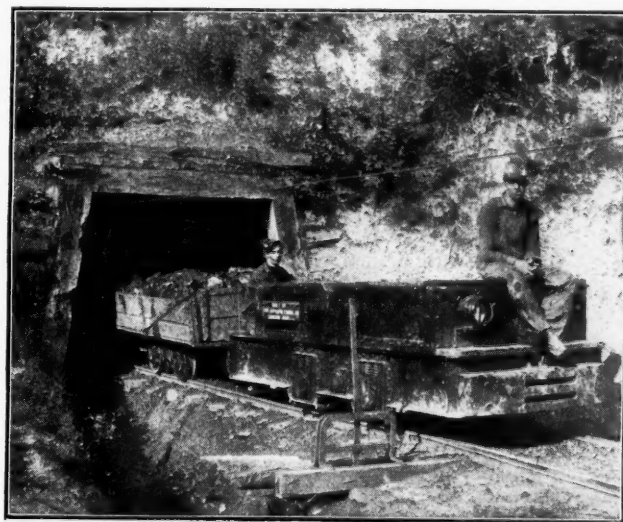
James L. Richards, president of the Massachusetts Gas Cos., has written a letter to James J. Storrow, chairman of the New England coal committee, in which he outlines his views on the President's bituminous coal price order. We believe his letter will be of interest to the readers of *Coal Age* and therefore give it in its entirety. The letter follows:

I desire to confirm the statement made by me to the effect that I believed the recent action of the Government in establishing the maximum price of \$2 per ton for bituminous run-of-mine coal in the Pennsylvania and a large portion of the West Virginia district, and \$2.15 per ton in the West Virginia New River district, both unwise and unjust; unwise because I believe the action will curtail production; unjust because the prices mentioned are less than cost of production to many operators; unjust because of the great difference in cost of production in the same territories on account of the different character and quality of coals and the thickness of seam mined. As an illustration, the Massachusetts Gas Cos. control and operate two different properties in West Virginia; one known as the Federal Coal and Coke Co., Grant Town, Marion County, W. Va.; the other the J. B. B. Coal Co., Twin Branch, McDowell County, W. Va. The Grant Town operation produces coal from what is known as the Pittsburgh big seam and is less valuable than the Twin Branch operation because of the quality of the coal. For instance, the Grant Town coal has about 14,000 B.t.u., while the Twin Branch coal has about 15,000 British thermal units.

The cost of our production at the Twin Branch operation for the month of July, 1917, was \$2.07 per gross ton, not including interest on capital stock of the company, and the average cost for the 18 months ending June 30, 1917, was \$1.5821 per gross ton, while the cost at Grant Town because of the thickness of the seam and mining conditions was considerably less. The two properties mentioned are not what is known as small operations, but are representative in their respective districts. The production of the Twin Branch operation for the 12 months ending June 30, 1917, was over 300,000 tons, and the production of the Grant Town operation for the same period was over 600,000 tons. Thus you have two operations managed and operated by the same people with costs varying substantially, and notwithstanding the fact that the coal which costs the most to produce is worth very much more per ton than the other, the same price, that is, \$2 for the run-of-mine, is the maximum price that can be obtained for either coal.

The Government has the right, and we invite the press, or you, representing the public, to examine our books, that you may verify the statements which I have made. While one might under the existing conditions be willing that the Government should take his property and operate it, under the conditions contemplated by legislation approved Aug. 10, 1917, yet I cannot conceive that owners of coal properties will continue to operate them at substantial losses for any great length of time. According to the press reports, when these prices referred to were established, it was realized that they "would work hardships on a great many of the smaller mines, and may force some to close down. This, it is claimed, will not reduce the total coal output, as miners released from the small mines will go to the larger ones."

Regardless of the justice of action based on the foregoing statement, I disagree with the facts stated regarding all the miners going from the smaller properties to the larger ones. While it undoubtedly will prove to be true that some employees will go to the larger mines, yet it is equally true that many will not. During the past year the management of all coal operations have had great difficulty in keeping their employees for the reason that many were tempted and desired to leave their mine occupations and go into steel and munitions plants and other enterprises paying exceptionally high prices at present. One reason that many of the miners remained with their employers was because they were married and disliked to break up their homes, but if they were obliged to break up their homes because of the mines where they are now employed being shut down, a large proportion of those people will seek employment in other industries. No one seems to know just how the cost prices on which the maximum selling prices were based were arrived at. I understand it has been stated in the press that the average price for the 18 months ending July 1, 1917, was used as the cost. If such is the case, it is obviously unfair, as cost prices have been advanced continuously during the past 18 months. For instance, the average cost at our Twin Branch property was \$1.5821 per ton, while the cost in July was \$2.07 per ton, showing an advance of \$0.4879 per ton.



IRON-TON STORAGE LOCOMOTIVE COMING OUT OF DRIFT MOUTH AT NORTON COAL CO.'S MINE, NORTON, W. VA.



Operators' Protests Lack Uniformity

The offices of the Fuel Administration have been the Mecca for coal operators from all parts of the country during the past week. Scores of protests have been filed against the official coal prices. The most significant deduction that can be made from the complaints which have been submitted is that the operators are rushing to Washington and submitting complaints which have not been thoroughly prepared. There is such lack of uniformity and such division of opinion among the operators themselves that the Fuel Administration is not being convinced that adjustments of price are necessary, while the mass of conflicting evidence is making it very difficult to arrive at the true situation.

Instead of each company submitting exhibits, the belief is growing that united action must be taken looking to the presentation of a clear-cut case from each district where the prices are too low to permit the satisfactory continuance of mining operations. Most of the exhibits which have been presented to the Fuel Administration are highly technical. Since these presentations of evidence must be considered in part, at least, by men who are not versed in the technic of coal mining, it is suggested by competent observers that the entire matter would be facilitated by adopting a more popular style in compiling the necessary information as to costs and other matters which enter into the question of price.

It is believed that the Fuel Administration is planning to make subdivisions of the states and make such changes in prices as may be found necessary to meet varying conditions. In the existing schedule of prices, 25c. has been added to the run-of-mine price to obtain the basis for prepared sizes and 25c. subtracted from the run-of-mine basis for slack. This is done without considering the fact that the percentage of slack will vary from 30 per cent., or less, to 60 per cent., or more. Since it costs as much to produce a ton of slack as it does a ton of prepared sizes, and as many districts find the President's prices are above the average price they can realize, many are suggesting that the best way to handle the situation is to fix the maximum price on run-of-mine only and allow the operator to sell prepared sizes and slack at the prices he may be able to obtain, provided that his average realization on the mine-run basis will at no time exceed the price fixed.

The average realization is particularly low in the West, where the operators are especially anxious to be able to make up losses they are incurring on slack by adding to the price of lump.

The offices of Dr. H. A. Garfield, the coal administrator, and of his officials have been moved from the Food Administration headquarters to a separate building at Sixteenth and L Sts. While Dr. Garfield is receiving some of the operators in person, an effort is being made to lay before him only such conclusions as may be reached after the complaints have been discussed with other members of his staff. H. D. Nims, of New York, and George W. Nasmyth, of Boston, have been acting in this capacity. Mr. Nims is a New York attorney. Mr. Nasmyth is secretary of the League to Enforce Peace. He is a specialist in matters of organization and it is he who will recommend the organization for the Fuel Administration.

Coal Production Shows Slight Increase

Production of coal in the United States amounted to 68.5 per cent. of full-time output for the week ending Aug. 25, figures issued by the Geological Survey show. This is a partial recovery from the depression of the week preceding, when the coal production fell to 62.5 per cent. The recovery was to considerable extent due to the partial cessation of the Illinois strikes. During the week under review the production in Illinois amounted to 69.3 per cent., as compared with 54.8 per cent. for the week preceding. An unparalleled situation is shown to exist as a result of labor troubles in eastern Kentucky and Tennessee, where the production has fallen to 4.7 per cent. of the full-time capacity of the mines. That these mines are capable of a high rate of production is shown by their output prior to July 28, when the average production was approximately 80 per cent. Abnormally low shipments of coal are being made from the southern Appalachians. This also is accounted for by strikes. The number of unfilled car orders continues to increase, but even with this improvement it still is responsible for a loss of 10.3 per cent. of the full-time output. The car shortage is most acute in Indiana and Ohio. During the week under review the only mines which are reported to have closed as a result of inability to operate under the present scale of prices are at Assumption and Moweaqua, Illinois.

While there was a slight decrease in the production of coke during the week ending Sept. 1, more cars were loaded than in any week since June 1. The shortage of yard labor continues to be the limiting factor in restricting coke output. This cause alone is responsible for 16.8 per cent. in the loss in production. Inability to secure a sufficient number of coke cars was responsible for a loss of 7.6 per cent.

Important modifications of railroad plans in Alaska became known last week when the testimony which has been taken by the Appropriations committee of the House was made public. Franklin K. Lane, the Secretary of the Interior, pointed out that the expense of construction is running as high as 22 per cent. over original estimates due to the high cost of material, supplies and labor. He stated that it may be advisable to connect the Matanuska Valley with Seward and the Nanana coal fields with the Tanana River. This, he points out, would give Matanuska coal an outlet on the seaboard and would make Nanana coal available for use in the Fairbanks mining district.

On the Recovery of Coal

SYNOPSIS—*The writer states that there is a scarcity of literature on the subject of the percentage of coal recovered. He thinks the public should know why coal is being left in the ground.*

SOMETIMES we are surprised and disappointed to learn of some of the shortcomings of our engineering literature. An engineer was telling me recently of his efforts to get exact information on the percentages of coal extracted in different districts and by different methods. He said that he had been looking through the literature of coal mining in this country in search of facts regarding this subject; and, while he had found some articles which treated the matter incidentally, giving brief descriptions of mining methods, etc., he had not found a single article of an engineering nature which dealt primarily with the percentage of recovery.

He had found a few statements concerning extraction, few in comparison with the large number of conditions and methods to be considered; and only an extremely small number of these made definite statements of the amount of coal taken out. Not one of them gave any details of any careful test of the amount of coal recovered. Of course, he might have missed something in the search, but it certainly was not much, for he is a careful worker.

DEARTH OF LITERATURE ON COAL RECOVERY

It is really startling to think that the literature of an industry whose basis is exhaustible, and is being exhausted, should hold so little definite information on the amount of coal lost or recovered. It should be noted that this refers to definite, or exact, information and not to mere guesses. At first one may think it is the fault of the publishers of coal-mining literature, but that is certainly not the case. Speaking generally, the information does not exist. There are, indeed, cases in which tests have been made, but they are few; and the people who are familiar with them do not seem to appreciate the interest they would have for the readers of coal-mining literature.

There have been a few cases in which publication of results would have been unwise. For example, a test was made in the East some time ago, in a district where much of the coal is leased. The people who made the test had almost swept up the coal with a broom, without regard to the cost of getting it; the idea being to see how much coal could be recovered when recovery and not profit was the object. They said that they could not publish the results of their test because the owners of the coal would want them to remove the deposits as cleanly everywhere, a proceeding which would be fatal to their profits.

The lack of reliable statements does not imply that no statements have been made, for that is far from true. Ask any mine superintendent what percentage of the coal he is getting out and he will tell you that it is so much, or "about" so much. But if the inquiry is pressed farther, it will be found that his estimate is, in most cases, a guess. It is a guess founded, of course,

on intimate knowledge of conditions, not a rough guess, but at best it is nevertheless a guess, and in nearly every case it is too high.

Then too there are general statements of the amounts extracted in different districts, and necessarily these are more or less rough estimates, made by more or less able engineers. No matter how able the engineer, he cannot have certain knowledge on the subject unless he has made careful measurements. Even going over the map of the mine with a planimeter will show only the sizes of the openings and of the pillars, not the amount of lost coal left in the mine, possibly in the gob, or as top or bottom coal, and it will do this only in case the map is accurate.

Probably the poverty of the literature on this subject is due largely to the attitude of the people regarding it. At first we had "inexhaustible resources." I can remember that time myself. Probably it is a human attribute to overestimate our possessions and think that what is big is infinite. Sometimes we have wondered what orator it was—it must have been an orator—who first spoke of inexhaustible resources. No doubt the phrase was old when the spies brought back to the wandering Israelites their report on the bounties of the Promised Land.

Anyway, we used to have inexhaustible resources until a few years ago; that is, until we began to think seriously about them. And that time of spacious abundance left its mark on the industry in a careless disregard of coal lost. This has altered, with the changing attitude of the coal industry itself and that of the general public toward the resources of the industry, to a half worried, half apologetic air.

We of the coal business are being questioned, and the question bothers us. We know that we are wasting the coal, our coal, our children's and their children's coal, their heat and light and power, but the business conditions are such that we see no other way to continue our work. We cannot control these conditions; we are caught in the stream, but sometimes we wish that the public could know something of the conditions of the coal industry and the general business of the country and know that we are not leaving coal in the ground merely through carelessness, but because it would cost more to remove it than it costs to get what we do take, more in most cases than we receive for our coal, and because if we charged enough to pay for it, this same public would accuse us of all possible crimes.

Sometimes we wish that someone had the power and the bigness to take up the coal industry and shake it until the old wrongs and the modern nonsense were shaken out of it. There would be no over-development, no price cutting, no competition except that natural to quality and location, no waste and no mining at a loss. This would be good, but that time is not yet.

But, despite the lack of interest in the percentage of recovery in the past, we are glad to know that there is a present interest in the subject and that this interest is growing. We have enough faith in coal operators and engineers to believe that the problem will be solved and that we shall soon be free from the charge of wasteful mining. Perhaps coal will cost more, but supply will last longer.

The Labor Situation

General Labor Review

The coal operators of the Central Competitive Field—western Pennsylvania, Ohio, Indiana and Illinois—met in Indianapolis, Ind., Sept. 6, with representatives of the mine workers of the same field, to discuss a new wage scale. The call for a conference, which was made by the United Mine Workers, quite frankly declared that its purpose was the obtaining of "a substantial increase in the mining scale," and, on inquiry, it was unofficially stated that the miners would ask for an increase of 20c. a ton for pick and machine mining and an advance of from 40 to 50c. a day for all day labor at the mines.

At the request of H. A. Garfield, the National Coal Director, the informal conference was, however, adjourned, subject to the call of John P. White, president of the United Mine Workers. William Green, the secretary-treasurer of the union, announced that Mr. Garfield had requested the three international officers of the organization and the district presidents of the four districts involved to meet him in conference in Washington, on Sept. 11.

Of course, the increase in wage will be extended to coal mines all over the country should the Central Competitive Field receive it, but if it is granted the price of coal must inevitably be increased just as widely.

The anthracite region at present is largely free from labor troubles. However, one dispute is worthy of record. The mine workers of the Delaware & Hudson Co. are opposed to the presence of the Mexican laborers who have been imported by the company. On Sept. 4, 800 men at the Jermyn colliery threatened to strike if the Mexicans employed at the mine were not discharged by Sept. 12.

Central and western Pennsylvania and the State of Ohio have had only minor troubles except one at the mines of the New Pittsburgh Coal Co., in the latter state, which difficulty is now settled, though the settlement is so unfair to the company that it is quite likely that the matter will have to be readjusted later, with the prospect of further trouble. Concessions such as made by the company, whereby coal is sold to the miners at far less than the cost of production, should never be granted as they are unreasonable and in a sense a violation of the contract; not, it is true, as far as the miners are concerned, but in relation to others who are virtual partners of the operators so conceding.

In the Springfield district of Illinois the mine workers refused to go to work on Sept. 10 because the authorities had forbidden the men to parade on the day preceding, which was Sunday. Sheriff Wheeler declared that he had no objection to a local parade if a permit were first obtained. The parade on Sunday was broken up because strike sympathizers purposed holding it in defiance of the authorities and in opposition to the recommendations of union officials, and at a time when the town was full of strangers, and it was consequently hard to maintain order. The mine workers declared they would refrain from work till they were allowed to parade. Seventeen mines, employing more than 3000 men, were affected.

In southeastern Kentucky, where the strike has closed, the mines almost without exception are idle. The miners are disposed to use their shotguns in enforcing the idleness on all the employees. Both repairs and operation are banned. A contract has been made between some operators of negligible importance and the union, but such approaches are not of any significance. The prospects of an "Alabama settlement" in southeastern Kentucky and Tennessee are not good. Even if effected it might be as unfortunate as the Alabama settlement actually seems proved to be. The mine workers will not accept it and have barely been induced not to restrain from striking to obtain another agreement.

It is probable that the union has less rather than more control in Alabama, and that a similar agreement in Kentucky and Tennessee would not end the strike but merely mark a dividing line between two periods of strike activity.

Alabama Miners Condemn Agreement

The agreement between the operators and mine workers, made on Aug. 27, by William B. Wilson, Secretary of Labor, is likely to come to a sad end, and the Alabama operators will not be encouraged to make agreements in the future. They will not be readily induced to accept a closed shop or any other form of recognition. They fully realize now that unions can agitate and not settle discontent.

On Sept. 6 the mine workers met at Birmingham in convention. The meeting lasted four days, and the officers of District No. 20 declared that the miners had been "tied hand and foot." However, when the meeting was all over, the mine workers had decided that a committee be appointed to go with the district officers to Washington, D. C., the purpose being to discuss the dispute with the proper Government officials and to endeavor to obtain a more satisfactory adjustment. It was also agreed that the mines would continue working in the meantime and that no strike should be "precipitated" until authorized by the International Executive Board.

At the meeting much was made in an address by President Kennamer of the reply from President Wilson to a letter Kennamer had sent him. The letter, which follows, cannot be regarded as holding out much hope. It is dated from the White House, Sept. 3:

I am in receipt of your very interesting memorandum, which you were kind enough to send me under date of Aug. 29, and you may be sure that it will have my most serious consideration. I hope and believe that I need not assure you that such matters as the present are constantly in my thoughts and that it is my desire to do everything that is possible to do in the circumstances to safeguard the interests of labor and to secure to all classes of laborers the benefits they are entitled to.

In the deliberations William Diamond represented the national president, John P. White. It was due to Diamond's adroitness that a strike was not called, as the mine workers' delegates present had been instructed to vote for one. It is by no means certain that the strike will not come off.

Illinois Does Favor Wage Increase

While, as stated last week, there are those among the Illinois mine operators who are not opposed to an increase in wage if an advance in price is granted, the feeling against an increase in the wage scale is quite strong; and it is backed by the uncertainty as to an increase in price. It is the old story with price regulation. Once the ruling powers fix prices, it is found impossible to rectify wages because those that fix the price do not dare to make the needed modification which increased wages entail.

The operators of the Fifth and Ninth Illinois districts are taking steps to resist any attempt of the miners to force an increase in wages. They declare that such action by the miners would be unfair and unpatriotic at this time. They point to the increased cost of all mine material and equipment and to the fact that the present wage contracts with the miners do not expire until March, 1918. They also call attention to the advance of 20 per cent. recently granted to them. The members of the Central Illinois Coal Operators' Association are of the same mind. Representatives of the two associations, at a joint conference, decided what should be their course of action at Indianapolis.

Governor Lowden Still Dissatisfied

Attorney General Brundage, of Illinois, still contends that the State of Illinois has power to seize and operate the coal lands of the state. He will not admit that the lower prices for coal set by the President would make such action invalid.

In an opinion submitted to Governor Lowden he says that so long as the Federal Government has not assumed actual control of the mines, the state may exercise its power of seizure and operation. The attorney general holds that there are two lines on which the state can act in an emergency severe enough to justify state control of the mines. It can seize the property under the power of eminent domain or, where its control is necessary to prevent widespread suffering, it can exercise its police power. The limitations are that the property can be taken only for a public purpose and that provision must be made for just compensation to the owners. It is not necessary that compensation be made in advance, but there must be in existence statutes under which there will be speedy ascertainment of damages and provision for prompt payment.

He holds that under the existing conditions the proper procedure is for the General Assembly to enact legislation embracing the following: First, a declaration of intention to subject the property to public use, and of its purpose to exercise the right of eminent domain. Second, definite provision as to the agencies through which and the manner in which the power of eminent domain is to be exercised. Third, definite provisions as to compensation, which will give to the property owners an unqualified right to a judgment which can be enforced by judicial process.

The opinion holds that while the authority to take property by eminent domain rests in the legislature, it usually exercises it through duly accredited agencies and the extent to which the power is exercised by the delegated agencies is limited to the express terms or clear implication of the statute. The opinion was asked by Governor Lowden before the Federal authorities took action, when it seemed that steps would have to be taken by the state authorities to deal with the fuel situation.

Two Decisions Against Companies

Charles P. Neil, the umpire of the Anthracite Conciliation Board, has decided that the contention of President James P. Matthews, of District No. 9, in regard to the topping of mine cars is correct. It will be remembered that the Short Mountain colliery of the Susquehanna Coal Co. introduced a new type of car and required the miners to provide the same height of topping as before. Charles P. Neil declared that the topping on the new steel car should be only 12 in. high, though the topping on the old wood car had been 15 inches.

The company contended that this provision applied to the conditions at the breaker, but the miners declared that the 12 in. should be measured at the chute, the loss in measurement due to the shrinkage which naturally resulted from the shaking of the load being placed on the company. The miners also wanted pay for the coal in excess of 12 in. that they had loaded on the wagons between the time of their introduction and the decision of Umpire Neil. The umpire sustained the men, stating that the assumption that it had been customary to load the wood cars with a topping of 15 in. was duly conservative. The testimony showed, he said, that in certain cases more than 15 in. of topping was demanded, but that in no case was less than 15 in. required. Consequently, the claimants are required to pay for the difference between the load on a car with 15-in. topping and that on a car with 12-in. topping, that being a provision of Section D in the 1912 agreement.

The umpire declared that he could find nothing to support the declaration of the company that the topping should be measured at the breaker. On the contrary, the testimony established that the topping required in 1902 was not and could not have been a topping measured at the breaker. "Some of the slopes through which the coal was brought in

1902 were so steep that the doors of the old cars had to be closed in order to keep the coal from falling off while being taken up the slope. The testimony further shows that the topping put on at the place of loading was such a height as to prevent the doors from being closed and that much of this topping had, therefore, to be shoveled off at the bottom of the slope before the cars were sent up. It was, therefore, obviously impossible in these cases to measure the topping required at the breaker."

As an outcome of the decision the conical topping required will be 12 in. measured at the place of loading, and the company will have to pay for the difference between a 15-in. and a 12-in. topping from the time at which the change in the type of cars was made.

An interesting decision was one on the "narrow breast" driven to serve as a "gangway." The question here involved is whether the men shall be paid in accordance with the physical labor they perform or with regard only to the purpose for which the work is done. Umpire Neil decided in the case against the Westmoreland colliery of the Lehigh Valley Coal Co. that the purpose of the work determined its character and not the width of the place. For a narrow breast \$1.05 a yard is paid, whereas for a gangway the payment is \$3.24. The narrow breasts were made 16 ft. wide and the gangways less. A breast is a place driven to secure coal, whereas a gangway is driven for the passage of traffic and air. There is always the difficulty that a breast may often be used later as a gangway, even though when driven there was no such purpose intended. However, there is always a disposition at mines to drive narrow places which are wide enough to be rated as rooms and yet narrow enough to serve as gangways. With all respect to Umpire Neil, the work is what should be paid for and not the use made of it. The price should be dependent solely on width, which is a measure of the labor and powder involved in driving the place.

Violence in the Kentucky Strike

Three instances of violence in the southeastern Kentucky and Tennessee strike zone occurred during the week. Persons ambushed on the hills opposite fired about 200 shots at W. E. Gunn, a principal owner of the Lower Hignite Mining Co., in Bell County, Kentucky, and at a party of six employees approaching the plant to make repairs. Mr. Gunn and an employee were slightly wounded, and Gillis Johnson was shot in the face and breast and is not expected to live. The other case of violence was in Knox County, Kentucky, where several hundred mine men, alleged to have been striking miners, exchanged shots with mine guards and employees in the power house of the company. Neither defenders nor assailants were injured as far as is known. Two men were killed in a battle growing out of the strike at the King Harlan Coal Co.'s plant in Harlan County, Kentucky.

The union authorities disclaim any responsibility for any of the cases of violence which county officials are investigating. The effect, however, has been to make it extremely difficult for the mine owners to obtain men to go to the plants and make repairs and otherwise keep the properties in operating condition.

Between 700 and 800 of the miners in the employ of the North Jellico Co. went out when the strike was called early in August, and the company is reported to be endeavoring to operate to some extent with nonunion men. Some of the plants are getting into bad condition and it is declared that many of the mines are filling with water which will take some time to pump out even after the strike is settled.

Information as to the progress being made toward a settlement is somewhat hazy and conflicting. Market conditions are keeping the operators apathetic. There is a report that a settlement is about to be made on a basis somewhat similar to the so-called "Alabama plan." Hywell Davies is quoted as predicting that Frederick G. Davis, of Pennsylvania, a Federal conciliator, will be instrumental in effecting a settlement.

Legal Department

Recent Decisions

ABSTRACTED BY A. L. H. STREET

Attorney at Law, Minneapolis, Minn.

Proof of Authority as Agent—Before plaintiff could hold defendant liable for the price of coal delivered to a third person on a theory of agency of such third person for defendant, the agency must be proved by other evidence than the acts and declarations of the agent himself. (District of Columbia Court of Appeals, *Swift vs. White Oak Coal Co.*, 44 Appeal Cases, D. C., 159.)

Discriminatory Coal Freight Rates—The Indiana Public Service Commission is empowered to compel a railway company to cease charging a coal consumer a higher intrastate freight rate than is charged his competitors, without finding that the rate charged him was unreasonably high. (Indiana Supreme Court, *Vandalia R.R. Co. vs. Public Service Commission*, 114 Northwestern Reporter, 412.)

Authority of Coal Company's Manager—When a coal company's lands are offered for sale, the president of the company, as such, has no implied authority to employ a real-estate broker to effect a sale, but, as general manager of the company's affairs, the employment would be within the scope of his implied authority. (Iowa Supreme Court, *Seever vs. Cleveland Coal Co.*, 159 Northwestern Reporter, 194.)

Recovery from Third Person of Value of Embezzled Coal—Since "no title to personalty can come through a thief," a coal company is entitled to recover from a third person the value of its coal embezzled by its shipping clerk and sold to such third person in the clerk's own name; the clerk not having been authorized by his employer to make such sales. (Kansas City Court of Appeals, *Pittsburg & Midway Coal Co. vs. Laning Harris Coal Co.*, 187 Southwestern Reporter, 263.)

Risk of Coal Conveyor Accident Not Assumed by Employee—The foreman of a coal conveyor, having complained of a defective condition of a cable connected with the apparatus and having been assured on Saturday that a new cable was on hand and would be installed, did not, by returning to work Monday, in spite of the fact that the defective cable still remained, assume the risk of being injured while attempting to replace it on a pulley from which it had slipped. (United States Circuit Court of Appeals, Ninth Circuit; *Inter-Island Steam Navigation Co. vs. Ward*; 232 Federal Reporter, 809.)

Coal Company's "Principal Place of Business"—For the purpose of determining the proper jurisdiction for bringing involuntary bankruptcy proceedings against a coal corporation organized under the laws of Wyoming, the company's "principal place of business" must be deemed to be in Kentucky, where it had complied with the corporation laws of that state, where its coal-mining and shipping operations were carried on, and where nearly all its lands were situated, and not in Tennessee, where the head office was located, and where its principal officers and stockholders resided. (United States District Court, Eastern District of Kentucky; *Roszell Bros. vs. Continental Coal Corporation*; 235 Federal Reporter, 343.)

Washrooms at Illinois Mines—Illinois Act of June 26, 1913, reads: "Every owner or operator of a coal mine . . . or other like business in which employees become covered with grease, smoke, dust, grime and perspiration to such extent that to remain in such condition after leaving their work without washing and cleansing their bodies and changing their clothing will endanger their health or make their condition offensive to the public, shall provide and maintain a suitable and sanitary washroom at a convenient place in or adjacent to such mine . . . for the use of such employees." A following section requires adequate and well heated quarters and facilities for this purpose, including lockers, hot and cold water, etc. Held, that this law is constitutional. "In the case of *Starne vs. People*, 222 Illinois, 189, this court held that a similar act passed in 1903, which, however, only applied to the owners or operators of coal mines, was unconstitutional on the ground that it was special or class legislation; that the Legislature cannot require the owners or operators of coal mines only to provide and maintain washrooms for their

employees, for the reason that such a law would place upon mine owners or operators a burden not borne by other employers of labor, and such enactment would be special legislation, and therefore unconstitutional and invalid. Any act of this kind, to be valid, must apply to all employers of labor similarly situated or to all employers of labor where conditions obtain which would require washrooms." This test is met by the act of 1913. (Illinois Supreme Court, *People vs. Solomon*, 106 Northeastern Reporter, 458.)

Negligence Not Presumed; Risks Not Assumed by Miner—In a suit against a coal operator for death of a miner run down by a motor car in a mine, there is no presumption of negligence on his part or on the part of the persons in charge of the car. Carelessness in either particular must be definitely established. The risks assumed by an employee are limited to those ordinarily incident to those of his occupation. (Kentucky Court of Appeals, *Linard's Adm'r vs. Interstate Coal Co.*, 169 Southwestern Reporter, 1006.)

Effect of Dissolution of Purchasing Partnership—After a partnership had contracted to buy coal, to be delivered by the selling fuel company during a year ending Apr. 30, 1912, the firm notified the company of its dissolution, and that the continuing partner would pay all debts, etc., but the company did not release the retiring member. Held, that the company is entitled to hold the two partners jointly liable for the contract price of the coal delivered, the notice merely serving as authority for delivery of the coal to the continuing partner, without affecting the liability of the retiring member on the contract entered into before the dissolution. (Tennessee Supreme Court, *Clinchfield Fuel Co. vs. W. M. Lundy & Son*, 169 Southwestern Reporter, 563.)

Right of Way for Water Pipe Line—An owner of land granted a coal mine lessee the right to lay a pipe line from a river to the mining "operations." After a mine was opened and a pipe line was laid to it, it was discovered that that mine could not be operated profitably and it was abandoned. A new mine was opened and a new pipe line laid to it over the same owner's land. This line was constructed at great expense and was maintained for two years without interference on the part of the landowner. Held, that, under such equitable conditions, suit lies on the part of the operator to enjoin the landowner from interfering with the new pipe line, and from maintaining suits for damages on account of its operation. (West Virginia Supreme Court of Appeals, *Mary Helen Coal Co. vs. Hatfield*, 83 Southeastern Reporter, 292.)

Interference with Surface Rights—Under a conveyance of the surface of a tract of land, the grantor reserving the underlying coal, with all usual mining privileges for removal of the same, the purchaser did not waive his right of surface support; and this right is violated by mining which negligently causes breaking of strata overlying the coal, thereby causing springs on the land to dry up. But the owner of surface property is not entitled to recover damages for injury to one tract through drying up of springs on an adjoining tract also owned by him; nor is there any liability on account of the stoppage of the springs if the mining was done in the usual way, or if the drying up occurred before the complaining land owner bought the tract affected. (Virginia Supreme Court of Appeals, *Stonegap Colliery Co. vs. Hamilton*, 89 Southeastern Reporter, 305.)

Rights and Liabilities Concerning Foremen—Under the general rule of law that an employer is not liable for injury to an employee occurring at a place where his duties did not require him to go, the machine foreman of a coal mine is not entitled to recover damages for injury sustained through being struck by blasted material when he hastened to another room on an assumption that an accident had occurred because shots were fired out of time. Nor can the mine owner be held liable because the foreman happened to be also assistant mine foreman and went to the place in question in the performance of his duties as such, it appearing that the shots were fired under the honest belief of one of his subordinates that the proper time for firing had arrived. A Kentucky coal operator is liable for negligent acts of an assistant mine foreman, resulting in injury to another employee, although the assistant may have been employed by the mine foreman, if the operator or his superintendent acquiesced in the employment. (Kentucky Court of Appeals, *Harris vs. Lam Coal Co.*, 190 Southwestern Reporter, 121.)

Editorials

Man as a Producing Machine

IN CONSIDERING the advantages of coal-cutting machinery, we never figure the output of a machine as the whole amount of coal it will cut. The amount of coal used in generating the current by which the coal is cut should rightly be deducted. We would not be buying machinery if it used as much coal as it cut. It is because there is a margin—a large margin as it happens—that we buy machinery and install it.

Now a man is an extremely wasteful machine. He consumes nearly as much as he creates, sometimes every bit as much as he creates, sometimes far more than he creates. There is no machine in use which is so utterly wasteful as a man.

Men claim they should be paid all that they produce and be allowed to expend it on themselves. Now it is clear that those who do this are machines without product. Perhaps they do little economic harm in the world, but they cannot be said to do any good. But then perhaps some will say, Why should they do any good? They are sufficient to themselves and that, they argue, is enough.

This is not an extremely pernicious doctrine in peace. True, over the tombstone of such a man might be written: "Here is a man who did nothing, because what he did with his hands he consumed with his teeth. The world is no better for him and little if any worse."

But in time of war we have to produce more than we consume or there is nothing for the war. It does not do merely to produce more if we consume more. We would not be able to say that a machine which produced 200 tons and used 200 tons in so doing did more, economically speaking, than one which produced only 100 tons and used 100 tons in the work.

In like manner a miner who makes a large tonnage and spends all he makes is not so effective a producer as one who makes a small tonnage and consumes less. But if the terms of product and consumption are put down in money, and if in figuring what the worker produces only his wage is figured as the value of his product, while his food and other purchases are figured at the price he pays and not at the cost of producing them, then indeed there is really no even economic balance between his product and consumption. There has been a saving though the saving does not fall to him. That saving is as truly existent as it would be in the case of a machine, if while you figured the coal mined at \$1 a ton and the coal used by the machine at \$1.25, you found the costs of the coal mined and the coal used were equal. It would be easy to see that a machine mining 100 tons at \$1 a ton and thus creating \$100 in estimated value and using 80 tons of the same kind of coal at \$1.25 a

ton and thus using \$100 in estimated value would appear unprofitable, but as a matter of actual fact it would be making 20 tons by the operation.

Now, where there are profits men can spend all they make in dollars, and yet there will be a profit to the world. It will go to the profiteer, and when he has it the Government may take all or some of it or can borrow it all or a part of it. If the Government takes all of it, then there is no advantage to the individual who undertakes the industry. Moreover, there is always a risk of loss. So the individual will not take the risk. But if there is a margin left him enough to safeguard him, he is willing to take it.

Of course, if the workingman does not consume all he makes, as expressed in mere cash figures, there is a further profit in his labor, and he can give or lend that profit or savings to the Government. It would be a great assistance to the state if he would in large measure so finance the war. But workingmen do not save much. If they did, they would have long ago become capitalists. Seeing how things have gone in the past, seeing that men spent all they made at least as far as cash prices are concerned, is it any wonder that people fear that the method by which an excess product for war is to be obtained must be sought not in direct reduction of the amount consumed, but in increasing the cost of that which is consumed so that there will be a balance—a big balance—from which the Government can make large levies either as taxes or as loans, preferably the first.

This is a wonderful war. It is a democratic undertaking; a war of peoples against peoples. We cannot hope to fight it by putting the resources of a handful of capitalists against the energies of the whole population in Teutonic and Turkish countries. We must all put our resources into the war. But somehow the workingman cannot see why he cannot go on being a machine which uses all it makes.

The British have had a way of raising money by small contributions of workingmen obtained in dribblets week by week. They obtained \$400,000,000 that way and they are quite proud of it. But it does not look so much when you remember that we are asking for \$21,000,000,000 a year. Manifestly there must be a better way of obtaining it than that. It can only be by drawing the resources from the capitalist and aiding him by high prices to obtain what we want to get from him. If you want much milk, you must give the cow luscious feed.

In Canada, it has been said, many women are drawing the allowances of the husbands at the front and making twice as much as their husbands made before the war, and spending it all. With due allowance for

higher prices, they must be expending far more for luxuries and follies than they did before this world struggle started. Such women cannot be said to be fighting the Kaiser, but fighting for him. And these Canadian women are not much unlike many of our own who little realize how hardly they are using the country that they so much revere. The problem for us all is how much we are going to put aside for our country. If we individually save and suffer for that purpose one-half what the Germans are saving and suffering, we shall do all that is needed. But how few there are who will do that much.

Reports on the Price of Coal

THE report of the Federal Trade Commission on anthracite and bituminous coal is painstaking, honest, fair, valuable and interesting. The reader will please add other congratulatory adjectives. The Federal Trade Commission deserves well of the public. It is not afraid to tell the truth and it will not stoop to tell anything else—and yet.

And yet, no one can look at the record with complete composure. There are muckrakers who can wander through its 420 pages and draw out all the evil things and leave the rest. The daily papers today, Sept. 10, tell us that a man lost his memory and disappeared, that a man has been found dead in a sewer that had been left open, that a widow has committed suicide with gas, and that another widow has apparently been murdered for her money, and they give other harrowing details from which arguments might be drawn as to national degeneracy, depravity and carelessness.

By collecting all these details into one unwholesome record we can put a wrong cast over things. The Trade Commission does not do this in the report. It is thoroughly conservative, completely reliable, but we cannot be so sure that its findings will not be used for a purpose not contemplated or desired by the commission.

The commission's majority recommendation is to the effect that the Government should buy all the coal and sell it. That is a radical conclusion reached after a most conservative and apparently impartial consideration of the conditions. The commission lays much stress on the importance of cheap and well distributed coal.

It does not go into the question of what will be done with that coal when it is obtained. Yet from other portions of the report we may draw conclusions. It says: "The cost of water haul from New York to Boston has been increased from 50c. a ton to as high as \$3 a ton. From Newport News bituminous coal is paying \$3.50 to \$4 per net ton instead of the normal 70 to 90c. to New England." Evidently the dollars which the coal man doesn't take the water transportation interests are ready to pick up, and the man that buys the coal and uses it, not being under bond to sell goods to the public at a reasonable profit, is at liberty to charge the people for the use of the coal as liberally as if he paid the higher rate.

In fact only in a few basal industries is "cost plus a reasonable profit" even discussed. The others are still frankly on a competitive basis. The price in the market rules everything. Why then hold coal to a course so strict? The explanation is simple. Years ago we entered into a socialistic experiment. We regulated the tariffs of railroads. We excused that action by the fact that they were using the right of eminent domain and that for the most part they held the only points where railroads could be constructed.

The coal men approved of this regulation, as rates were kept down and tariffs were so stabilized that the operator knew what he had to face. The railroad companies, probably without malice but certainly not without reason, brought all their powers to bear against the coal companies as soon as prices began to rise. The railroads have been protesting against socialism because it robbed them, but as soon as the price of coal rose and made operation almost impossible, the railroads demanded that the coal companies be subjected to a socialism against which they themselves had for so many years feebly protested.

Now, the coal men will support the railroads in their demand for socialism. They will not willingly sell for "cost plus" unless others are also compelled to do the same. So while almost everyone deplores socialism, it continually spreads. Everyone whose own feet are befouled would spread a net for those who are still free. Those who want freedom themselves should think twice before they restrict the freedom of others, for by restricting the price of coal the vote for socialistic regulation has gained a million adherents. After a while those who thought they were only regulating the coal industry will themselves be snugly strait-jacketed.

Margins Were Too High

THE Federal Trade Commission has been investigating the "margins" received by retail dealers in various localities. By "margin" is meant the difference between the price paid by the retailer for coal and the amount received from the consumer for the same coal. From this "margin" must be deducted the cost of doing business before any "profit" can be realized. In many of the cases thus far investigated the average margin has been found to be excessive.

Thus, in Providence and Pawtucket average margins for April and May of this year were found to be from \$2.72 to \$3.50, while individual margins in one or two cases exceeded \$5.

It is considered that under normal conditions \$2 is a fair margin on which the retailer may transact a profitable business. And while it is admitted freely that conditions during the period considered were abnormal, yet it is given as the judgment of the commission that though margins somewhat higher than normal might be justifiable, circumstances did not warrant the amounts charged. These excessive margins are branded as unjustifiable, unreasonable and in some cases absolutely inexcusable.

Snapshots in Coal Mining



TIPPLE OF THE NEW RIVER COAL CO., ECCLES, W. VA.



SULLIVAN MINING MACHINE IN OPERATION AT THE MINE OF THE BLUE DIAMOND COAL CO., BLUE DIAMOND, KY.



MAIN OFFICE OF THE UNITED STATES COAL AND COKE CO., GARY, W. VA.



CONCRETE DRIFT MOUTH AT MINE OF CLINCHFIELD COAL CORPORATION, DANTE, VA.



RETARDING CONVEYOR AND TIPPLE, CLINCHFIELD COAL CORPORATION, DANTE, VA.

Department of Human Interest

A Company's Letter to Its Men

The South-East Coal Co., of Seco, Ky., has addressed the following letter to its employees through Henry Pennig, Jr., its superintendent:

Gentlemen—It is not with any intention of criticism that I am bringing the things that are to follow before you, but it is with the spirit of patriotism and of thrift which our country and company are trying at this time to embed in the minds of its people. I say patriotism, because the President of the United States has said to the miner that he should not slacken nor fail but should remain at his duty the same as his brother who is fighting in the trenches.

We have just as important a part to play in the war as the soldier, for what would the soldier do if we did not furnish coal to the steel mills, foundries and factories in order that they might make the guns, ammunition and supplies that are necessary to our army and navy? Coal is the base of supplies; very little can be made without its use. It therefore behooves us to make an effort to mine just as much as is possible and to work each and every day that we are physically able to perform our duties as a whole or in part.

Thrift covers almost as much ground in this instance as does the word patriotism. Our country is using by far more material now than it has ever used before. We are also shipping more material to our allied nations. This together with the shortage of labor is causing our country to be stripped of various supplies and many of those are the ones that are used by us in mining coal. We therefore must be very thrifty and careful what we do with what supplies we now have on hand, for there is a possibility of our not being able to secure any more.

Patriotism means the loving of one's country and the act of zealously supporting and defending it. Thrift means economy and economical management of property.

These two therefore go hand in hand through this time of war and each is very necessary to the other in the winning of the war. Now to get a little closer home with what I have to say in direct relation with the above. In my recent inspecting visits into and about the mines, my attention has been called very vividly to the many articles of supplies that are not being taken care of; that is, you, gentlemen, are not using a proper degree of thrift. A few spikes, a small roll of copper wire, a piece of insulated cable, track bolts, fishplates, iron ties, small pieces of tee rail thrown back and partly covered with slate, are some of the things that call my attention and cause me to say what I do, about thrift. There has been a time when we could almost afford to throw away bent spikes and not take time to straighten them, but it is not so now. Let me give you at this time a few figures showing the difference in prices two years ago and today:

	1915	1917	Per Cent. of Increase
Spikes $\frac{1}{2}$ x 2 1/2.....	\$2.65 per keg	\$7.50	183.0
Rail, 20 lb.....	26.25 per ton	94.50	260.0
Pipe, 2 in.....	10.40 per cwt.	21.50	106.2
Copper wire.....	.17 per lb.	.42	147.0
Mining machine cable.....	115.79 per cwt.	340.00	196.0
Pipe fittings, 2 in. T.....	.19 each	.29	53.0
Brattice cloth.....	.24 sq. yd.	.32	33.0
Lumber.....	13.00 per M.	20.00	54.0
Mine-tie iron.....	.30 each	.37	23.0
Mine-tie timber.....	13.00 per M	20.00	54.0
Machine Repairs:			
Bonds, 22 in.....	44.16 per cwt.	74.50	67.0
Track bolts, $\frac{1}{2}$ x 2.....	4.35	6.30	45.0
Fish plates, 20 lb.....	.22 each	.30	36.0
Mine cars.....	54.00	104.00	93.0
Feed, corn.....	.72	2.15	198.2
Feed, oats.....	.75	.99	32.0
Feed, hay.....	19.50 per ton	33.00	172.0
White waste.....	.09 lb.	.19	111.0
Explosives.....	1.22 1/2	1.92 1/2	56.0
Bar iron.....	2.55 per cwt.	5.25	106.0
Nails.....	1.97	4.25	116.0
Mining-machine bits.....	.05 each	.06 1/2	30.0
Average advance, 100 per cent.			

At this great percentage of increase, you can readily see why it is necessary for us to use thrift in order to exist.

We cannot operate without certain supplies, and at the rate these supplies are being used we are soon to see the time when we will be unable to get them at any price. As it is now, we cannot secure material when we want it, regardless of the price we would offer.

We have had mining-machine cable bought for six months and we have not yet received it. It now takes six months or more to secure rail and about one-half of the manufacturers will not sell spikes, pipe and other articles that are not necessary to mining, all saying that the output of their mill is sold or that the Government is using all they can furnish.

We had a car of sewer tile bought from a Louisville firm and as the time of delivery approached we wired them asking about the shipment and received an answer that the United States Government had taken over all the tile of our particular kind and would continue to do so for 30 days. We had our ditch dug and if something was not done to relieve the situation the ditch soon would have fallen in and our work, costing many dollars, would have been lost.

Did we kick and object and try to raise "cane" with this concern? No, we accepted the situation with a patriotic spirit that the Government work was more important by far than our own, and we immediately took steps to secure any size of tile it was possible to get, and by paying a little more we are enabled to go happily on our way. Why am I telling you this? It is to show you we are all as one in the program of winning the great liberty war, and to show you that you can do your part here, if you do not have the honor to be called to the great young army. You can do your bit by working all the time at something that is for Uncle Sam's good and by making sure you are using all the thrift possible. In doing so, you will be showing a marked degree of patriotism.

Anthracite Mine Workers' Gardens

The mining companies in the anthracite region of Pennsylvania have well succeeded in interesting their employees in the planting of gardens on land owned by the companies. It is estimated that more than 5000 persons have availed themselves of the plots that the companies have apportioned to them.

Officials of the companies did not lose interest in the project as soon as the planting was done, but continued to furnish assistance in hope that successful crops might reward their efforts. Scientific farmers are offering suggestions and advice to those cultivating the plots, and every helpful means is being employed to encourage the gardeners. The spirit of helpfulness shown by the companies is reflected in the enthusiasm and earnestness displayed by the amateur gardeners, who devote to the plots all their spare time.

Evidence of the earnest spirit manifested may be seen by a visit to the land of the Susquehanna Coal Co. in the vicinity of Nanticoke, Penn. Here are 1100 plots under cultivation, each containing one-eighth of an acre. The miner-gardeners have planted a variety of vegetables, but the potato is more largely cultivated than all other crops combined. In the spring the company provided two carloads of seed potatoes at cost, and a promising crop is confidently looked for. Officials recently had agents of the Luzerne County Farm Bureau visit the plots and advise the gardeners as to the best methods for securing satisfactory results.



Ye Great School of Learning





Mucking



Drilling



Thinking



Resting

Learnin'

BY BERTON BRALEY
(With apologies to Kipling)

When I began as a mucker,
I was a husky young plug,
Always a takin' of chances
Down in the mine where I dug;
Miners said, "Kid, you be careful
Everywhere you may be at,"
But I laughed and got cute till I fell down a chute—
An' I learned about minin' from that.

After awhile I was drillin',
Runnin' a full-size machine,
Handlin' the fuses and powder,
Proudest young buck ever seen.
Shift Boss was Jimmy McLoughlin—
Great guy for safety was Jim;
And he licked me with skill when I tamped with a drill—
An' I learned about minin' from him.

Bobby McGuire was my partner—
Mighty wise buddy was Bob;
Taught me to set up my timbers,
Showed me the tricks of the job;
Used to say, "'Nother shift comin',
Don't use up all of yer vim,
The boss has gone past, don't be workin' so fast"—
An' I learned about minin' from him.

There was one gang that I worked with,
Used to get tanked quite a bit,
Came to work bleary an' shaky,
Not very lively or fit;
Wouldn't test ground up above 'em—
Down came that shaky roof, flat!
With a crash an' a bang, it erased the whole gang—
An' I learned about minin' from that.

An' so I have learned as I labored
The ways an' the work of a mine,
How one way of doin' is crazy
An' others is sure to be fine;
An' the end of it's sittin' an' restin'
An' wishin' you'd saved up more pelf,
An' if you would know if my story is so—
Go learn about minin' yerself!

—*Engineering and Mining Journal.*



Chuting



Licking



Banging



Learning



Discussion by Readers

Interpreting Mining Laws

Letter No. 2—I was much interested in reading the letter of Oliver Young, *Coal Age*, Aug. 18, p. 294, in which he draws attention to numerous vague expressions and omissions in the Bituminous Mine Law of Pennsylvania. I agree with him that there is need for revision of that law, and the same is true also of the anthracite mine law.

One point that has caused much trouble in the anthracite region is the use of the word "miner," in connection with the granting of certificates to candidates for the position of mine foreman or assistant mine foreman. At times candidates, on presenting themselves for examination for these positions, have been refused the right to sit in the examination, because they could not give satisfactory evidence of having mined coal five years, as required by law.

WHAT IS A "MINER, IN THE MEANING OF THE LAW?

The question has been raised, "What is a miner, in the meaning of the anthracite law?" As explained in the article published in *Coal Age*, Aug. 25, p. 330, the chief of the Department of Mines recently withheld the certificates of some of the candidates who had succeeded in passing the examination, until he had submitted the question of what was intended to be understood by the word "miner," in art. 8, sec. 4, of the anthracite law, to the attorney-general for his opinion. The decision of the attorney-general seems to have been that anyone who has been engaged in work underground for a period of five years would be included within the meaning of the term "miner."

When we speak of any craftsman, we mean a man who has a working knowledge of all branches of his trade but is especially competent in the more important work requiring skill and experience. It is rare, indeed, that a workman will be found who is equally competent in all branches of his trade. In coal mining, the mine foreman may not be an expert in digging coal, but he should have a good knowledge of all the work performed in the mine.

PURPOSE THE LAW WAS INTENDED TO ACCOMPLISH

In considering the meaning intended to be conveyed by the term "miner," in the anthracite law, we must understand the object that the law is intended to accomplish. The law is described as "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith."

In my opinion a man who has gained no other experience in the mine than that of digging coal at the face for five years does not possess the knowledge that would fit him for taking charge of a mine as foreman or acting as assistant foreman. Personally, I would

rather trust myself in a mine where the foreman in charge has had an experience of five years in general underground work, including the digging of coal.

As the matter stands at present, it is for the examining board to determine the qualities and qualifications of each individual candidate. The board should use its judgment in deciding whether the five years' experience of a candidate has been such as to fit him for the duties of a mine foreman. Their decision should depend on the character of work he has performed during that time.

FRED B. HICKS.

Kingston, Penn.

The Mexican as a Coal Miner

Letter No. 1—The article by P. L. Mathews, *Coal Age*, Aug. 25, p. 312, entitled "The Mexican as a Coal Miner," is a timely one, since, as a result of the war, the future may develop an urgent need to make good the labor shortage.

It is a question whether we will have with us after the war the Slavs, Lithuanians and other classes of foreign labor that now form so large a proportion of the workers in our mines. Many of these will be retained in their own country on the work of reconstruction when the war has ceased.

POSSIBILITIES OF MEXICANS AS MINERS

For this reason, it is well for us to face, now, the inevitable question of a coming shortage of labor in the coal mines in this country. We should familiarize ourselves with the traits and characteristics of those nationalities that will be available. The Mexican is our next-door neighbor and will, in my opinion, make a far more desirable citizen than the Chinaman. The introduction of the Mexican into the mining industry would not incite friction or result in the unpleasant consequences that are quite sure to follow the importation of Chinese miners. The Mexican is, in truth, a part of the white race and would commingle with our people more readily than the foreign element of the Far East.

Some time might be required to acclimate the Mexican to the more rigorous winters of the North, but this would be overcome eventually. That the Mexican has peculiarities cannot be doubted. Although I have not had the opportunity of observing his habits on many occasions, in a few instances his work and characteristics have come under my personal supervision. Whatever else may be said against the Mexican, I believe that he will work well when he knows his task.

One case that I recall is an interesting one. It is that of a Mexican employed in work on the surface. Although the weather was sultry and very hot, he would insist on wearing his coat, which was frequently kept buttoned up, but I never saw him perspire. It is

difficult for the average mind to comprehend how the blood of an individual would keep from rebelling under such treatment of the human anatomy.

This, however, was not the only evidence of the man being abnormal. One day, he abruptly quit his job and went to work in another place where he was paid 50c. less a day and required to work an hour longer. Judging from appearances, the sole ambition of the man seemed to be to work and to keep warm, although he finally quit work altogether, laid around a couple of days drinking, and then disappeared leaving no one the wiser for his actions.

AMERICAN LABOR PROBLEMS PAST AND PRESENT

The story may seem overdrawn, but it is nevertheless the truth. While I am inclined to believe the man is the exception and not the rule of Mexican labor, at least in respect to his erratic ways and abnormal traits of character, the incident serves to point the need of training this class of workers to enable them to fit into our social system. The mentality of the man I have described would correspond to that of a child who is attracted with a nickel rather than a dime, because the former is the bigger of the two.

American labor problems, in the past, have afforded a varied experience. Not many years ago, almost our sole dependence, in the manufacture of coke, was the Italian laborer. He came from a sunny clime that did not fit him physically for withstanding the rigors of our northern winters. Large numbers of Italian laborers were employed on railroad and other construction work.

The Italian seemed mostly in his element, however, when engaged on the coke ovens, both winter and summer. In this work they were found very useful because the excessive heat of the ovens would madden the native American. At that time, few Italians went into the mines, mining being an industry with which they were wholly unacquainted; but, today, Italian miners are making big money, digging coal at the face.

DIFFERENCE BETWEEN MEXICAN AND ITALIAN LABOR

Unlike the Mexican, the Italian is not a mixed race and has none of the blood of the Indian in his veins. But, on the other hand, while the Mexican is part Indian and part Spanish, there is no reason why he cannot be made amenable to our customs and standard of living, since Spain is a civilized nation and many of our American Indians have become civilized and made good citizens. There is little doubt that, by the use of proper tactics and skill, Mexican labor can be made very useful in the mines.

Mexican labor is already employed successfully in some of the Southwestern mines. The chief problem to be dealt with, in their case, is that involving their mental traits and social characteristics. The Mexican must be aroused from his lethargy and the most effective means of doing this is through his need and desire for money. When he has once become interested in the struggle for wealth, his education in other matters will follow naturally.

It seems to me that it is a safe prediction to make, here, that it will not be long before American thrift will supplant the Mexican's beads, blankets and firewater

that form the attractions in his own country. As a mine worker, the Mexican may develop possibilities that will exceed our expectation.

W. H. NOONE.

Thomas, W. Va.

Importation of Chinese Miners

Letter No. 10—Regarding the situation as a whole and considering the several questions of the shortage of labor, the unwillingness on the part of many miners to work regularly, the increasing number of useless strikes and suspensions, and the demand from all quarters for an increased production of coal, in the present war crisis, there is presented a grave and complex problem difficult of satisfactory solution.

The problem that confronts the nation is one that should be studied and discussed from the standpoint of patriotism, having regard to the public interest and eliminating, as far as possible, one's personal convenience and prejudice. It is impossible, at this time, to form any accurate idea as to when the war will terminate or what conditions may arise with regard to the demand for coal and the available supply of labor. For this reason, it may be necessary, at some later stage of the game, to resort to measures that we would not care to consider at the present time.

DUTY OF RAILROADS TO REMEDY CAR SHORTAGE

The suggestion that the decrease in the production of coal is to be attributed largely to the failure of railroads to furnish an adequate number of cars for its shipment is, I believe, quite true. Railroads are, no doubt, experiencing the same shortage of labor as the coal mines and have their own troubles. Nevertheless, it would seem that they should be required to remedy the car shortage as quickly as possible. It may prove a large expense for them; but they are as able to bear the burden as coal operators are to have their mines stand idle for lack of cars.

Attention has been drawn a number of times to the unwillingness of miners to work full time, especially following payday at the mine. In many districts where there is no shortage of miners it has been shown that the mines are not working full time because the miners do not report for work in sufficient numbers to operate the mines.

DRINK HABIT AMONG MINERS CALLS FOR THE ELIMINATION OF THE SALOON

It frequently happens that miners put in a large portion of their time wandering from place to place, working a little here and a little there, which greatly interferes with the efficient operation of the mines everywhere. The instance given by Thomas Hogarth, in his letter on "Prosperity and Booze," *Coal Age*, July 28, p. 170, illustrates clearly how the drink habit among miners curtails the production of coal.

The instance cited by Mr. Hogarth is not uncommon, and every effort should be made by labor organizations and companies, alike, to overcome the evil. Labor organizations can do much in this direction by naming men on their committees who are reasonable and conservative and who will not permit a petty or imaginary grievance to interfere with the regular operation of a mine. The efforts of coal companies should be exerted

for the elimination of saloons from mining towns and districts, and everything possible should be done by them to discourage the drink habit among their employees.

Just how far the suggestion of W. E. Richards, *Coal Age*, Aug. 11, p. 251, can be carried out, in securing Government control of coal mines has not, as yet, been established. In the event of Government control, it might be found necessary to place the mines under military discipline, when miners would virtually be drafted to work in the mines, as soldiers serve at the front. It is not to be expected that such a condition would suit the general class of miners any better than the suggestion to import foreign miners. How far the arrangement would prove successful and satisfactory to all concerned cannot be anticipated. It is to be hoped that another solution will be found that will give promise of being accepted with greater favor.

STRIKES AND LOCKOUTS INVITE FOREIGN LABOR

P. L. Mathews, in an excellent article, *Coal Age*, Aug. 4, p. 195, presents some figures to show that if strikes and suspensions could be avoided and miners induced to work a little more time, there would be no need of considering the importation of Chinese miners. However, as it appears, labor troubles are increasing rather than abating, in frequency. It would seem, also, that miners are daily growing more indifferent to the interest of their employers, a feature that gives the operators little encouragement, since the higher wages and shorter hours allowed them do not seem to improve the situation in the least.

Let me assume, in closing, that railroads have made good the car shortage, so that there is no longer any difficulty in obtaining the needed supply of cars; and the operators have adopted every improved method of mining and their equipment is up to date; but there is still an inadequate production of coal because of the unwillingness of miners to work and the existence of strikes and labor troubles. It would seem then that the only solution possible would be the importation of foreign miners from any place where they could be found. The question that has been raised in regard to disposing of this foreign labor when the war is ended appears to me to be one of less importance than the paralyzing of our industries, in the present crisis.

COAL MINES MUST OPERATE CONTINUOUSLY

If the present war is to be brought to a successful issue, there must be no curtailment in production in any industry. The farming districts cannot furnish men for the mines, as their labor is required in the field; neither can the shops and factories be expected to supply men to work in the mines, as their labor is required to furnish the needed supplies of munitions of war, clothing and other material that make up the necessities of life. The same is true of railroads.

Therefore, in the event that the miners cannot or will not work the mines to their full capacity, it will become necessary to find the required labor abroad, and bring it to this country, in order that the mines may be kept in operation. When this class of labor is no longer needed, there will be found a just and right way of disposing of those who are not wanted.

JOHN ROSE,

Dayton, Tenn. Former District Mine Inspector.

Number of Mine Cars Required

Letter No. 1—The question asked by "Superintendent," *Coal Age*, Sept. 1, p. 385, is one in which most mine managers are interested, because there should always be a sufficient number of mine cars in working order to prevent delays in the haulage system and furnish full trips.

"Superintendent" would have made his question easier to answer had he stated the thickness of coal bed, number of rooms in each section, and whether pick or machine mining was practiced. Since he failed to give these data, however, assumptions are made to explain the rule that "there should be as many cars as rooms and two trips additional in each haulage section."

As two of the four partings have about the same long haul and two the same short haul, we assume, for argument, that there are two sections to the mine, from each of which 400 cars must be obtained. The trips from one section contain 25 cars and those from the other 40 cars, each, and consequently the number of trips from each section would be, respectively, $400 \div 25 = 16$ trips, and $400 \div 40 = 10$ trips. The time consumed in making a round trip in each section is, therefore, $(8 \times 60) \div 16 = 30$ min., and $(8 \times 60) \div 10 = 48$ min., respectively.

If four cars are gathered from each room during a shift, there must be 100 rooms working in each section; or, if eight cars are hauled from each room, there need be but 50 rooms working in each section. According to the rule, 100 rooms, in each section, would require a total of 330 cars for the two sections and two extra trips in each section, and 50 rooms would need only 230 to satisfy the conditions.

PRACTICAL OPERATION IN GATHERING HAUL

If the rooms were on 60-ft. centers, the maximum gathering haul would be 6000 ft. for 100 rooms and 3000 ft. for 50 rooms, both of which are too long. For the sake of economy, I suggest that not more than 25 rooms be worked, at one time, on one entry.

In this contention it will be understood that the width and the length of rooms as well as the thickness of the coal bed are factors to be dealt with, as they determine in a great measure the number of loaded cars a room can supply. However, the rule given will apply to practically every case, in pick mining.

To obtain the best results from machine mining, all the coal undercut should be loaded out of a room, in each shift. If we assume the bed to be $6\frac{1}{2}$ ft. thick, rooms 20 ft. wide, and the cut 6 ft. deep, the coal broken in each room would approximate $30\frac{1}{2}$ tons. Under such working conditions, 26 rooms would be needed to supply 400 cars holding 2 tons apiece. According to the rule given above, the short-haul section would require $26 + 2 \times 25 = 76$ cars, and the long-haul section $26 + 2 \times 40 = 106$ cars to furnish the required tonnage, making a total of only 182 cars.

It will be noticed that, by this arrangement, the loaders in each section will have an equal number of cars, and the work will be concentrated. Therefore, if everything moves methodically, there will be no delays either inside or outside of the mine. To further economize in gathering where machines are used it would be a good

plan not to work all of the 26 rooms on one entry, but to work half the number on each of two entries.

In this answer I have assumed that roomnecks or headings are driven to make up the deficiency from idle rooms; also, that all of the mine cars are in good working order. However, as this blissful state is seldom realized, there should be ten cars held in storage for each section.

Scranton, Penn.

E. B. WILSON,
Mining Engineer.

Wagon Mines vs. Patriotism

Letter No. 1—In reading the article entitled "The Truth About Wagon Mines," *Coal Age*, Aug. 25, p. 324, the thought came to me, how many of the men who are running such mines have ever considered the question of their individual loyalty to the United States Government, in connection with the business in which they are engaged?

There are a number of things that must be considered in discussing the general effect of the operation of wagon mines on the coal production of the country, in the present war crisis. Most important of all, there is the class of men who operate the mines, the efficiency of their equipment and the quality of coal they produce.

As a rule, these operations have only a few acres of coal that lie chiefly in the crop of the seam. The coal is not only poor in quality and contains much dirt, but it has a low heating value. It can be mined and marketed only when the prices are high.

COMPARISON UNFAVORABLE TO WAGON MINES

There are a number of wagon mines in the neighborhood where I live. These are owned exclusively by farmers or men from town who possess no knowledge of mining as it is conducted today in the larger mines. A comparison of the enormous prices they must pay to get this coal mined and place it on the market, with the cost of mining and marketing coal in larger operations, shows conclusively the great disadvantage under which the smaller mines are worked.

The mine in which I am employed as foreman pays \$0.4975 per ton for mining the coal, to which must be added \$0.0446 per ton for pushing the cars, making a total of \$0.5421 for mining and loading the coal. We employ machines for cutting the coal, and a man can load from 9 to 10 tons a day after a machine.

Compare this with the results obtained in a wagon mine adjoining our property. In that mine they pay \$1.25 per ton for mining the coal with picks. The coal in this district is very hard and a man cannot dig more than 4 tons per day, in advance work. Pick miners will thus earn \$5 a day, which is about equal to the wages earned by the men loading after the machines in our mine. The wagon mines must haul their coal about 2 miles to the railroad. The teamsters are paid \$1 to \$1.25 per ton for hauling, and a single team will handle about 6 tons of coal a day.

For the sake of illustration, let us suppose there are six men employed digging coal in one of these mines and four men are hauling the output to the railroad. These ten men mine and haul to the track, say 24 tons of coal per day, which is a little less than 2½ tons per man per day. How does their work, in

this case, compare for efficiency with what the same men would be able to perform working in our mine and loading after a machine? Even assuming that each man loads only 8 tons of coal per day, the total amount loaded would be $8 \times 9 = 72$ tons, which is $72 - 24 = 48$ tons more than they could load at a wagon mine, under the best conditions.

In my opinion, the President has taken the right step and one that will greatly increase the efficiency in coal production, by fixing a low maximum price per ton on all coal f.o.b. cars at the mines. This will have the effect of eliminating inefficient operations where the conditions and equipment are such that the mines cannot produce coal at the price named. The miners and laborers employed in those mines will then seek employment in mines where the equipment will render their labor more efficient. Also, teamsters and farmers will then do more efficient work in the fields than they were able to perform at the mine.

MINE FOREMAN.

Chickasaw, Penn.

Letter No. 2—Referring to the article entitled "The Truth about Wagon Mines," *Coal Age*, Aug. 25, p. 324, in which the writer condemns the operation of small mines, assuming that they are detrimental to the best interests of the country, allow me to say a few words in reply to his contentions.

It is not my desire to dispute the figures presented, which are undoubtedly correct; but I want to say that you cannot, in justice, condemn one class of men for what others are permitted to do without censure. In other words, what the writer of the article condemns in John Doe's activities is being done on a much larger scale by coal companies who are producing many times the tonnage produced in the small mine operated by John Doe.

SHOULD SMALL OPERATIONS BE DISCOURAGED?

The claim is made that the operation of small mines should not be encouraged, seemingly forgetful of the fact that a small business has the same right to profit by its operations as larger interests. Operations that are wrong, whether large or small, must be controlled through the proper channels and for the good of the country.

The point I would emphasize here is that the small operator is not the only culprit in coal mining. For example, if John Doe is getting out 40 tons of coal a day, under conditions that are not so efficient as those existing in a larger mine putting out 200 tons a day, it may be asked, How does the work in the latter mine compare, in respect to efficiency of production, with that of its next door neighbor putting out 2000 tons a day? The entire question is, therefore, a relative one, in respect to conditions and equipment; but the same rights must be accorded to all, which is merely a business proposition.

The same reasoning applies to farmers, who find that they can make more money hauling coal than by attending to their crops. Who is going to say that the farmer must pass up his chance of earning a little extra money, at a time when he would otherwise be unemployed? My experience with this class of labor, in the

operation of coal mines, is that they only turn up when they are not plowing, sowing or harvesting.

Any form of regulation seeking to control operations must do equal justice to all, large and small alike. What the writer of the article claims John Doe is doing, in compelling a railroad to furnish him a single car for loading, other companies are doing much the same who require a larger number of cars.

My contention is that we cannot object to John Doe getting his share of the business and realizing his portion of the profits, although he is obliged to work under conditions that are not so efficient as those in larger operations where more capital is available.

While the writer of the article probably intended to claim that the small business operation of John Doe does not serve the best interests of the country, I would ask, Who is to judge of this matter? With the risk of appearing illogical, I am going to say that your correspondent is right in contending for the highest efficiency in coal mining operations; but his application of methods to produce that efficiency is wrong.

LACK OF COÖRDINATION WIDE SPREAD

The truth of the matter is that there is a great lack of coördinated effort in the coal mining industry, which causes a great waste of time and increases the cost of production. There is much overlapping in organization. It is this lack of coördination and system that is the chief factor in lowering the efficiency of coal production. But, these faults are as common to large operations as to small ones. The question of controlling them is a huge one.

Speaking of the small operator, it must be admitted that he performs a service, in times like these, by working properties that a larger company would not touch. Coal is thus mined and put on the market that would otherwise be lost to the country, which has the effect of prolonging the life of our coal fields to that extent. This condition is evidence, again, of the chaotic system that we have permitted to exist in the development of coal properties.

The highest efficiency should demand that no company be allowed to start operations in a field, mine out the best coal and then abandon the field, leaving acres of minable coal, simply because its extraction would mean an increase in the cost of production and a reduced profit. Taking all things into consideration, the small operator, instead of being a menace today, appears to me as a benefactor.

J. F. K. BROWN.

Montreal, Canada.

Uncertificated Mine Foremen

Letter No. 7—It is my belief that the mines of this country will not suffer from any lack of certified men during the present war. Miners who have worked long enough to secure the practical and theoretical experience required to pass an examination and secure a certificate will not, in nine cases out of ten, be able to pass the physical examination required of men chosen for the army.

However, let us look at the question from another side and ask, Why have we so long advocated the policy of employing certified men to act in an official capacity

in mines? Is it not because we hoped, thereby, to eliminate or, at least, to reduce the number of mine disasters? If this is true, then why should we step back 200 years to the time when a knowledge of the theory of mining and of mine gases was not thought necessary, and the "mine devil" went into a mine and burned out the gas before the men went to work?

EXPERIENCED MINERS MOST DIFFICULT TO MANAGE

Admitting, for the sake of argument, that there are a number of uncertified miners who could act as mine foremen in case of need, we may ask, To what extent would the safety of life and property in mines be guaranteed by their employment in an official capacity? My experience, as mine foreman, has been that the hardest men to manage in the mine are those who have had years of experience and cannot be told anything. Such men have no knowledge of the principles of mining and are wholly unfit to give instruction to the men in their charge.

Whatever the practical experience of a man has been, he cannot realize how the gas expands in abandoned areas during a period of low barometer. He does not consider that 200 cu.ft. of gas, generated in a section of the mine where 8000 cu.ft. of air is passing, will produce 2½ per cent. of gas in the return from that section, and that if there is a slight reduction in the amount of air in circulation the section will become dangerous for work.

CERTIFIED FOREMEN COMMAND RESPECT OF MEN

Viewed from another angle, a certified man, acting as mine foreman, holds the respect of his men better than one who is uncertified. The men will obey his instructions quicker than they will respond to the orders of an uncertified foreman. They realize that a foreman who has passed the examination and secured his papers knows more than they do themselves; but they think that a man who has no papers is no better than themselves.

I recall a case where a certified mine foreman instructed a miner to timber his place and the work was promptly done. A few days later, the coal inspector, who was an uncertified man, ordered this same miner to set a few props in his place. Instead of obeying the order, the miner chased the inspector out of the room and resumed his work.

In conclusion, let me say that should it happen that no certified man was available to fill the place of foreman in a mine, and a good practical miner could be found who was thought to be capable of filling that position, let him go before the district inspector and take a brief examination to prove his knowledge of what is required to make a mine safe, and show that he can test for gas with a safety lamp. If he satisfies the inspector in regard to his capability, let him authorize him to act as mine foreman until the next examination.

I venture the remark that few men who advocate the employment of uncertified foremen would risk their lives in a gassy mine that was in charge of such an official. The safety of a mine requires that the foreman shall have a knowledge of the theory and principles of mining, in addition to his practical experience.

Walsenburg, Colo.

ROBERT A. MARSHALL.

Inquiries of General Interest

Accumulation of Mine Gases

The question has been raised here as to whether it is possible for two gases, such as carbon dioxide (CO_2) and methane or marsh gas (CH_4), to be found accumulated in the same place. It seems to me that it is quite possible for this to occur. Will you kindly submit this question to readers of *Coal Age* and invite them to give their opinions and experience in this regard.

Bracken, Penn.

FIREBOSS.

We gladly submit this question to readers and hope that the experience of many will be such as to prove the fact that it is possible to find both of these gases accumulated in the same place.

Assume, for example, that the rooms on a certain entry have been driven in a considerable distance, say 60 or 80 yd. The seam lies practically level, and the tendency of the gobs to fire produces more or less carbon dioxide. The ventilation at the face of the rooms may be none too good, with the result that more or less blackdamp collects at the floor, in the workings.

Now, if this seam is generating any gas, there is nothing, under the conditions described, to hinder the gas issuing from the coal face, from accumulating at the roof in these rooms. The air current may be sufficient to prevent any large accumulation of methane at the roof or blackdamp at the floor, but still not strong enough to keep the place clear of these gases, which are continually being formed and are carried away but slowly by the air current. Let us have the experience of miners that will prove or disprove these statements. A question like this is always best answered by the statement of facts and occurrences observed in the daily operation of a mine or which are matters of record.

Squeeze in Pillar Work

It has been a common practice among mining men of my acquaintance to use the term "squeeze," in reference to drawing pillars. Not understanding their application of the term, I looked up its meaning in mining textbooks, but failed to find it used in that connection.

As explained in the textbooks, the term relates to the effect of leaving too small pillars for the support of the roof. Suppose, for example, that it was the intention, in mining a certain seam, to leave pillars sufficient for the support of the surface, but the pillars left were too small for that purpose and the surface was damaged by the settlement of the roof, would not that be described as a "squeeze"?

But, on the other hand, the term seems to be applied, here, quite differently. For instance, take a place where all the coal is to be mined on the room-and-pillar system, without regard to any damage to the surface. Suppose the rooms are driven to their limit and the work of drawing back the pillars is in progress. Instead, how-

ever, of taking out all the coal, a few small stumps are left which prevent the strata from breaking and cause the weight to ride over onto the pillars yet to be removed. As a result, the coal in the pillars is crushed and the roof may break a long distance ahead of the work. I want to ask if such a condition can be described as a squeeze.

I appreciate the fact that, in drawing pillars where the coal is taken out clean and the seam is overlaid with a hard roof, much weight will be thrown on the ends of the pillars, crushing the coal and making it difficult to mine. But, I would not call that a squeeze. I should be glad to be set right on this matter.

—, Ky.

INQUIRER.

The term "squeeze," as used in coal mining, describes an irresistible settlement of the overburden, following too great or too rapid an extraction of the coal, in the working of a seam, and by reason of which the pillars left for the protection of the mine passages and workings and the timbers supporting the roof show signs of an excessive pressure that, if not relieved, will do great damage and may, eventually, close the openings or passageways completely.

The evidences of squeeze, or "creep," as it is sometimes called, are the chipping of the pillars close to the roof; breaking of the timbers; and numerous roof falls in the section affected. The condition described by this correspondent, in connection with drawing the pillars and leaving numerous small stumps that prevented the settlement of the roof and threw the weight forward a considerable distance ahead of the work can properly be termed a squeeze, due, in this case, to the incomplete extraction of the pillars, which prevented the breaking of the roof behind the work.

The use of the term squeeze has no direct reference to the damage that may or may not be done on the surface. Damage to the surface resulting from a squeeze is only incidental. The term squeeze applies wholly to the effect produced in the mine workings. Squeeze may occur in the incomplete drawing of pillars, as in the case described by the correspondent, or it may result in the regular working of a mine, by reason of the pillars left to protect the openings being too small to support the weight above them.

When a squeeze starts in one section of a mine, it is very apt to travel forward until it meets with sufficient resistance to stop its progress. The setting of timbers and the building of cribs to arrest the progress of a squeeze will generally prove inadequate. The surest remedy is to resort to the rapid extraction of those pillars that have been permitted to remain over a large area and which prevent the breaking of the roof and the settlement of the overburden on the waste. Too large an area standing on pillars is objectionable, because it not only invites a disastrous squeeze, but affords opportunity for a dangerous accumulation of gas.

Examination Questions

Miscellaneous Questions

(Answered by Request)

Ques.—A pair of hoisting engines have cylinders 36 in. in diameter and a stroke of 6 ft. and run at 40 r.p.m. What should be the indicated horsepower of these engines, working with 60-lb. boiler pressure and assuming two-thirds of the boiler pressure as the average effective pressure on the piston?

Ans.—Taking the mean effective pressure in the cylinder as two-thirds of the boiler pressure, or 40 lb. per sq.in., and multiplying the area of a single cylinder, in square inches, by this pressure, we have for the total pressure in one cylinder, $40(0.7854 \times 36^2) = 40,715$ lb. The piston speed is $2 \times 6 \times 40 = 480$ ft. per min. Therefore, the indicated horsepower, for the two cylinders, is

$$H = \frac{2(40,715 \times 480)}{33,000} = 1184 + hp.$$

Ques.—What size of pipe should be used in transmitting 5000 cu.ft. of air per minute a distance of 3000 ft., at sea level, when the initial gage pressure is 70 lb. per square inch?

Ans.—It is necessary, first, to find the number of compressions in air at the given gage pressure, or the ratio (r) of the absolute pressure to the atmospheric pressure at sea level, which gives, for a gage pressure of $p = 70$ lb. per sq.in., $r = (70 + 14.7) \div 14.7 = 5.76$ compressions. Then, taking the weight of a cubic foot of air as $w = 0.0766$ lb., and assuming a pipe constant, which varies with the size of pipe used, but in this case can be taken as $c = 50$, the diameter (d) of pipe required to transmit a quantity of air $Q = 5000$ cu.ft. per min. a distance, $l = 3000$ ft., we have

$$d = \sqrt[5]{\frac{wlQ^2}{rc^2p}} = \sqrt[5]{\frac{0.0766 \times 3000 \times 5000^2}{5.76 \times 50^2 \times 70}} = 5.64$$

A 6-in. pipe will therefore be required for this transmission.

Ques.—In a coal shaft 450 ft. in depth, water is accumulating at the rate of 250,000 gal. per day. It is desired to remove this water by pumping 8 hours a day. Give the size of the water-end and steam-end of the pump, allowing one-fourth for slippage of water past the piston, and assuming an effective steam pressure of 50 lb. per sq.in. when working at a speed of 80 ft. per min., the pump being located at the bottom of the shaft.

Ans.—Allowing one-fourth for slippage of water past the piston, three-fourths of the piston displacement, in cubic inches, should be equal to 231 times the number of gallons pumped per minute, which is expressed by the formula,

$$3/4(0.7854 D^2 S \times 12) = 231 G.$$

Then, for a piston speed $S = 80$ ft. per min. and a discharge of $G = 250,000 \div (8 \times 60) = 520.8$ gal.

per minute, we have, for the diameter (d) of the water end of the pump, expressed in inches,

$$d = \sqrt{\frac{231 \times 520.8}{\frac{3}{4} \times 0.7854 \times 80 \times 12}} = 14.58 \text{ in.}$$

Taking the efficiency of the steam-end of the pump as 0.75 and calling the diameter of the steam cylinder, in inches, D , the steam-cylinder pressure, in pounds per square inch, p , we have, since the foot-pounds of work developed in the steam cylinder must be equal to the foot-pounds of work performed in raising the water through a height $h = 450$ ft., in the shaft, the weight of water being $8\frac{1}{2}$ lb. per gallon,

$$0.75(0.7854 D^2 p S) = 8\frac{1}{2} G h$$

Substituting the values $p = 50$ lb. per sq.in., $S = 80$ ft. per min., $G = 250,000 \div (8 \times 60) = 520.8$ gal. per min., we have for the diameter D of the steam cylinder, in inches,

$$D = \sqrt{\frac{8\frac{1}{2} \times 520.8 \times 450}{0.75 \times 0.7854 \times 50 \times 80}} = 28.8 \text{ in.}$$

Ques.—What is the area of a triangle the sides of which are 135, 189 and 276 yd. respectively?

Ans.—When the three sides of a triangle, only, are given to find the area it is necessary to first find the continued product of the half-sum (S) of the given sides and the difference between that half-sum and each of the sides a, b, c respectively and extract the square root of the resulting product, as expressed by the formula,

$$A = \sqrt{S(S-a)(S-b)(S-c)}$$

The given values, in this case, are the following: $S = \frac{1}{2}(135 + 189 + 276) = 300$; $S - a = 300 - 135 = 165$; $S - b = 300 - 189 = 111$; $S - c = 300 - 276 = 24$. Hence, substituting these values in the formula, we find for the area of this triangle

$$A = \sqrt{300 \times 165 \times 111 \times 24} = 11,483 + sq.yd.$$

Ques.—(a) Describe briefly what is meant by first aid to the injured. (b) For what kind of injuries in a mine would you render first aid?

Ans.—(a) First-aid work is any work that can and should be performed on first reaching an injured person and before the arrival of a doctor, by means of which bleeding may be arrested, life saved, pain alleviated or the wound protected from further injury. The work includes reviving an unconscious person and resuscitation where breathing has ceased. In general, it consists of the careful removal of the person to a place where he will have better air or be more comfortable, reviving him with stimulants or other means, applying bandages or a tourniquet to arrest bleeding, or using other simple remedies while waiting for the expected arrival of the doctor.

(b) First aid should be rendered to persons overcome with gas, prostrated by heat, suffering from shock, or one who is bleeding profusely or whose limbs are broken and require immediate attention.

Coal and Coke News

Harrisburg, Penn.

Note of the strain put upon railroads by the war is taken by the Public Service Commission in an opinion handed down by Commissioner John S. Rilling, granting only a part of what was asked in a complaint brought from the anthracite region against the Delaware, Lackawanna & Western Railroad Co. for car service.

In regard to war conditions the opinion reads: "The commission cannot be unmindful of the present abnormal conditions and the extent to which they affect railroad companies. The several agencies cooperating with the Federal Government in the conduct of the war have called the attention of public service commissions to the great demand now being made upon railroad companies and that they have been urged to curtail their train service to better meet the demands of the nation. We are called upon to accept as our patriotic duty certain inconveniences or burdens which the war conditions have imposed. On account of these conditions commissions feel constrained at this time to make orders relating to such matter as are considered in this report, which, if made under normal conditions, might be varied."

Some of the most prominent bankers in the central bituminous district are of the opinion that the arbitrary fixing of the price of coal at \$2 will seriously interfere with the sale of the second issue of Liberty loan bonds. A statement issued following a meeting of these bankers says: "The inability to deliver bonds has proved a serious handicap in the sale of the first issue. Bonds should have been in the hands of the bankers to be sold as called for. If this inability to deliver bonds continues during the sale of the second issue, it will prove a more serious handicap and in many instances will make it impossible to market bonds that could be sold if physical delivery were made. The arbitrary price of \$2 per ton fixed on coal was deplored not only because it will seriously interfere with the sale of bonds, but also because it has interfered with prosperity in many communities. In many cases where considerable sales of Liberty Bonds had been hoped for through campaigns among the operators and miners, few or no results are expected now."

Coal operators and heads of industrial plants have asked the Appeal Board of exemption at the Capitol that the State Constabulary should not be withdrawn from the state under the draft law, as this body is prepared at all times to guard property and quell riots. This view is also shared by the rank and file of the mine workers, who have been protected by these men from the I. W. W.'s. It is also argued that if it had not been for this fine body of mounted police the Government would not have been so successful in its raid on the Industrial Workers of the World in this state, especially in the upper end of the hard-coal fields, where 50 state policemen helped the Federal officers make their raids last week.

Half of the charters granted by the Secretary of the Commonwealth since Sept. 1 was for coal companies, practically all of them for the bituminous-coal field. The twelve companies chartered have an aggregate authorized capital stock of almost half a million dollars. One company was chartered with \$200,000 capital and another with \$100,000. In the latter half of August over twenty coal companies were chartered, the aggregate capital being more than a quarter million dollars.

PENNSYLVANIA

Anthracite

Wilkes-Barre—Thomas J. Williams, state mine inspector of the Eleventh Anthracite District, not only wears Red Cross and Liberty Loan buttons, but prides himself on having three sons who have entered the service of Uncle Sam. Grafton J., a former principal of the Hillsdale Ave.

school, served on the Mexican border and lately secured a reserve commission at Madison Barracks, and is now stationed in the U. S. Army training camp at Solway, Syracuse, while Myron, a Lafayette College student, and Winston, a high school student, are at Fort Hancock with the Third Pennsylvania Field Artillery.

Shenandoah—Three contract miners came near losing their lives twice on Sept. 8 at the Maple Hill colliery. Locked in a tank cage, the men were being lowered into the mine. The engineer dropped the tank into the sump, almost drowning them. Seeing his error, the engineer hoisted them from the sump again, when the carbide the men carried came in contact with the water, generating gas, which was ignited by the naked lights. An explosion followed, badly burning them before they were raised from their perilous position.

York—Thousands of tons of coal screenings producing a size of hard coal slightly smaller than pea, are being taken from the Susquehanna River north of the dam of the York Haven Water and Power Co. The business is proving profitable because the deposits are as deep as four feet at many places and a large number of river men are engaged in the business. The coal is washed before being placed on the tugs and brought to shore. Because of the difficulty to get bituminous coal and its high price, the Edison Light and Power Co. and other York concerns have contracted for large quantities of the fuel.

Reading—Reports have been revived here that the Philadelphia & Reading Coal and Iron Co. will again sell its hard coal directly to the consumer at a number of points throughout the Schuylkill Valley. This was once done in this city and elsewhere, with the result that the price of the product was kept down. The company has large chutes in this city and in many other places, and could go into the business with very little trouble, so far as that end is concerned.

Cranberry—Extensive improvements are nearing completion at the Cranberry Creek Coal Co.'s collieries at Cranberry and Crystal Ridge. The Cranberry company is a subsidiary of the Lehigh Coal and Navigation Co. The Cranberry breaker has been entirely remodeled and preparations are being made to do away entirely with steam motive power. Alterations have been under way at these collieries for the last two years and involve an expenditure of approximately \$200,000. Cranberry will be the first complete electrically operated colliery in the Lehigh coal field.

The Harwood Coal Co., a subsidiary of the Lehigh Coal and Navigation Co., is overhauling its breaker so as to increase its output. New trestles and conveyor lines are being built to take fuel from the mines and culm banks to the boilers of the Harwood Electric Co., owned by the company. The electric company supplies power and light to a score of towns throughout the northeastern part of the state. Situated at the mouth of the mines and along culm banks containing thousands of tons of heretofore discarded fuel, this company is able to render service cheaper than smaller concerns in the various towns its lines embrace.

Scranton—Receiving an amount said to be \$3750, St. Brendan Council, Young Men's Institute, has entered into a settlement with the People's Coal Co. for coal alleged to have been mined from under the clubhouse of the organization on North Main Ave. The case is listed for trial at the October term of common pleas court, when the case will be marked off the calendar. In the settlement the right of the council for support is in no wise affected, the \$3750 being only for the coal already mined. It developed through testimony offered by mining engineers that the People's Coal Co. had taken coal from five veins under the Young Men's Institute home.

Pottsville—In order to avert a threatened strike the Philadelphia & Reading Coal and Iron Co. announced on Sept. 5 that their employees would not be charged the Government-fixed prices for pea coal, \$4 per ton at the mines, but would get it at the old schedule price, \$2.55. The general pub-

lic will have to pay the Government-fixed prices for all sizes.

Hazleton—Rapid progress is being made by the Cranberry Creek Coal Co. in extensive improvements and extensions in the colliery at Cranberry. The breaker is being entirely remodeled, electric machinery being installed for the operation of the breaker machinery and the hoisting of coal from the mines, and the company plans to completely electrify the plant. The improvements represent an investment of about \$200,000.

The C. M. Dodson Coal Co. of Hazleton, has filed a complaint with the Public Service Commission against the Harwood Electric Co. and the Schuylkill Gas and Electric Co. for an increase in rates to their collieries, which they deem unjust. The Locust Mountain Coal Co. also filed a complaint against the same companies.

Larksville—A general movement to clean up the town is to be started by the State Department of Health, which has been studying conditions attending the outbreak of intestinal disease in this town. Doctors, nurses, engineers and inspectors will go from house to house to tell the miners' families how to clean up and stay clean.

Ashley—Four loaded gondolas slipped back when the hoisting rope caught on the jib on the No. 1 plane of the Central R.R. of New Jersey recently. When the slack had been taken out the tautened rope snapped and the trip ran away. A derail situated just above where the highway passes under the plane near the top of the mountain sent the cars off the track and tumbling down the embankment. The coal trains of the Central ordinarily taken up the mountain by way of the planes had to be backtracked so that they could get cars for the collieries to operate.

Harleigh—Eight pump runners of the Harleigh-Brookwood Coal Co. will receive \$150 back wages, this being the amount due them on the new pump rate that went into effect on Apr. 1 last.

Bituminous

Greensburg—An employee in one of the mines of the H. C. Frick Coke Co., Antonio Gannzaro by name, has filed the first claim in the Workmen's Compensation Bureau for a broken neck. He was struck on the head by a heavy timber in the mines and avers that his neck is broken. He is now able to be out, but is badly crippled.

Robindale—A deal has just been closed whereby the Conemaugh Smokeless Coal Co. has purchased back the big coal plant which it sold some time ago to E. F. Saxeman, of Philadelphia. The consideration was in the neighborhood of \$200,000. Some extensive improvements are to be made at the plant. The deal also includes a store building and a number of modern dwellings.

Connellsville—Alphonse Pachette, a miner employed at the mine of the Latrobe-Connellsville Coal Co., is believed to have broken all records for a two weeks' pay. In fourteen days Pachette dug a total of 234 tons of entry coal, with the result that his pay envelope contained \$180.18. Miners in this section have been drawing record pays for the last two years, but the one drawn by Pachette surpasses anything heretofore recorded.

Scottsdale—The Irwin Valley Gas Co. has purchased about 80 acres of Pittsburgh vein coal in North Huntingdon Township for \$19,000 from A. C. Stickle. The company has not announced when developments will begin on the new property.

Washington—The Pittsburgh Coal Co. has purchased from James W. Emery of this city 339 acres of coal land in South Strabane Township. This tract adjoins those recently taken up by the Pittsburgh company. The consideration for this sale was \$71,700.

Huntingdon—The Huntingdon & Broad Top R.R. proposes to build an extension from Sandy Run, Bedford County, into a newly developed coal field in Fulton County. The proposed branch will be 5 miles long and will be the first railroad into Fulton County.

WEST VIRGINIA

Monongah—Announcement has been made by Superintendent John Riggins, of the Consolidation Coal Co., that the company is planning to take the sanitary conditions of Monongah in hand and make it one of the cleanest towns in the state.

Barrackville—Mine No. 7 of the Jamison Coal Co. has now been thoroughly flooded and preparations are now being made to pump the water out in order that the exploration into the exploded parts of the mine can be continued. Superintendent John M. Wolfe stated that the work is being carried on in the best of style and nothing serious thus far has happened to hamper the work.

Bluefield—It was announced that the Newberry Coal and Coke Co. would put several mines in operation within the next two weeks. This company owns hundreds of acres of coal land in Logan County, where its new workings are to be opened.

Fairmont—The Central West Virginia Coal Operators' Association has ready for presentation to the Council of National Defense the first reports in its crusade to ascertain and make public the actual damage done the coal-mining industry of Central West Virginia by the inadequate supply of railroad cars.

The Rachel Gas Coal Co., which is operating a mine near Downs, has established a world's record in sinking and completing a concrete shaft to the distance of 364 ft. and loading coal from the mine within 81 days from the time the contract for sinking the shaft was let. Shaft contractors say this is the shortest time in which this feat has ever been accomplished. The contract was let June 11, and the shaft was completed Aug. 31.

The annual meeting and inspection trip of the Consolidation Coal Co. officials started on Sept. 11, and will last to Sept. 21, inclusive. On this trip there will be about 40 officials of the company, including the higher officials and executives, and the manager of each division, general store managers, the division auditors and the heads of each department of the company.

Huntington—The Baltimore & Ohio is laying rails for a lengthy extension into the Big Sandy coal field, and it is expected that cars will be available for coal shipments by Oct. 1.

The westward movement of coal over the Chesapeake & Ohio R.R. is practically at a standstill at this time, due to embargoes by roads that take coal from the C. & O. west of here, according to officials of that road. The only movement of coal is that going to the Great Lakes by orders of the Federal Government giving preference to such shipments. Western roads are handling no commercial shipments at all. Officials say between 5000 and 7000 loaded cars are stranded between Huntington and Cincinnati.

To connect the Ohio River with Lake Erie by canal is the aim of the Lake Erie and Ohio River Canal Board, to afford better shipping facilities from the rich mining and agricultural sections of Pennsylvania, Ohio and West Virginia, according to a report filed by Burd S. Patterson, of Pittsburgh, secretary of the board, with Governor Martin G. Brumbaugh, of Pennsylvania.

Between 750,000 and 1,000,000 bushels of coal from the Kanawha River section passed Huntington on barges recently on an artificial wave, caused by manipulation of the dams in the Ohio and Kanawha Rivers.

Vivian—The Workers of the American Red Cross at Vivian were more than delighted to continue their work in the new Red Cross building that the Tidewater Coal and Coke Co. has just completed for them. An old dwelling was torn down and a fine workroom, snowwhite throughout, has taken its place, with spacious closets, a fine workbench and cutting tables. The many windows are shaded by white awnings with large red crosses painted on them.

Charleston—The Kanawha & Michigan Railroad Co. has let the contract for grading six miles of its extension from Gauley Bridge to Belva to connect with the branch line from Belva to Swiss. When this extension is completed and connected up with the stretch of track acquired in the purchase by the Kanawha & Michigan of the Kanawha & West Virginia R.R. about 6000 acres of coal bearing of the Kanawha measures will be made accessible. It lies principally in Fayette County.

Arguments on a writ of prohibition involving forty-one attachments and liens on 8000 acres of coal lands in the north-

ern part of the state, the property of Josiah V. Thompson, of Uniontown, Penn., amounting to more than three million dollars, counting interest for two years, were made recently before the supreme court of appeals.

Since the Workmen's Compensation Fund was started in 1913, in West Virginia, a total of 68,394 accidents have been reported, of which 2015 were fatal. Of the remainder, 65,531 were temporary disability, 746 were permanent partial disability and 100 were permanent total disability. The number of accidents and fatalities has increased every year, but this is due to the fact that the number of subscribers to the fund has grown until it now numbers 2348 employers, employing 169,740 men.

Commissioner Lee Ott of the Workmen's Compensation Fund recently made public the report of the commission for the year ending July 31, 1917. One of the most interesting facts brought out in the report is the fact that in the matter of ratio between administrative expenses and premiums the State of West Virginia makes the best showing in the United States.

ALABAMA

Birmingham—The Majestic Coal Co. has tendered the Jefferson County Board of Education a site at Majestic, in the northern part of the county, for a high school which will be erected at a cost of \$18,000, and will serve a number of mining camps in that vicinity.

KENTUCKY

Bowling Green—The local chamber of commerce is contemplating promotion of a cooperative coal company to provide cheaper coal to Bowling Green citizens. The chamber obtained permission to use the Government barges lying in the river and got a quotation of 6c. a bushel at the mines for mine-run coal. This, it is said, would permit the coal to be laid down at the wharf for 10c. The local dealers were offered the business project, but declined to take hold of it, stating that they did not have sufficient capital. Retail coal is selling at 18c. a bushel.

Owensboro—The City of Owensboro, owning its lighting plant, has added 1½c. to its service rates in order to make up for an increase of \$65,000 in the city's annual coal bill.

In order that the Owensboro Gas Co. might continue to supply factories working on Government contracts, Federal authorities here commandeered two carloads of coal and are seeking means of relieving the situation. The company, which has been giving poor service during recent weeks, had been buying southeastern Kentucky coal on contract. The supply ceased when the strike developed. Western Kentucky coal, though available, does not produce satisfactory gas.

OHIO

Cincinnati—In the case of the Kentucky Coal Land Co. against the Mineral Development Co., of New York, in which the plaintiff was awarded possession and ownership of two tracts of coal land in Letcher County, Kentucky, aggregating over 2100 acres, the New York company has appealed to the United States Circuit Court of Appeals against the judgment of the lower court.

More coal has been received here by river companies by means of the artificial rises secured by manipulation of the Ohio River dam system, and it is estimated that 150,000 tons a month can be moved by this means as long as the river is below a navigable stage.

Athens—The Wirtz Coal Co., of Hamilton, Ohio, has filed suit against the Canaan Coal Co. for \$1575 damages, alleged to be due on account of the failure of the defendant to deliver nut and slack, according to a contract said to have been entered into.

Columbus—R. W. Gardiner and A. R. Peterson, expert accountants attached to the Federal Trade Commission, have arrived in Columbus to check up costs of production of coal at various representative mines in all mining districts. They recently completed the investigation of costs in Indiana.

Steubenville—Deeds covering the transfer of approximately 1000 acres of coal lands in Cross Creek, Island Creek and Wayne townships at a cost of over \$100,000 have been filed in the office of County Recorder Selah by local representatives of the Wayne Coal Co., an immense enterprise that is

attracting the attention of the coal stripping world.

East Liverpool—The new coal tippie at the American Sewer Pipe Works has been installed and is now in operation. The tippie is worked by steam and a large bucket on the end of a wire pulley lifts the coal from the cars and dumps it into the bunkers on the other side of the track. The company is now putting in a large supply of fuel for the winter.

Barnesville—The shaft of the National Coal Co., of Cambridge, is nearing completion at Lamira (Lewis Mills) 9 miles east of Barnesville. The company recently purchased about 5000 acres of coal and intends developing it soon. The shaft, which is about 175 ft. deep, will probably be completed by Oct. 1.

Martins Ferry—Another new mine will be opened by the Lorain Coal and Dock Co., within a short time. The mine is situated at Ridgeway's Grove, between Blaine and Barton. It is expected that the mine will be ready to run coal by Jan. 1.

INDIANA

Indianapolis—Consumers, mine operators, railroad men and members of the public service commission opened a concentrated drive against the order issued by Robert S. Lovett, Federal director of coal transportation, providing for the shipment of coal on the St. Louis & Vincennes division of the Pennsylvania lines, to Great Lakes ports and the Northwest, when it was announced that practically every industry and public utility in Indiana will be seriously menaced if the order is not modified or rescinded by Federal authorities.

Notices to all railroads on which originate carload shipments of Indiana coal, urging them to notify coal operators that they should equip their mines with machinery for loading coal in box cars, were sent out recently by the Indiana Public Service Commission. That action has been taken in Ohio. The notice from the commission says it is informed there are large numbers of box cars not fit for shipment of grain which could be used for coal.

Elwood—That it may buy and store its entire winter supply of coal at one time, the city is having large coal bunkers built beneath the city hall, where coal for all the city institutions will be kept. City scales also have been bought and will be placed in the courtyard at the rear of the city building.

ILLINOIS

Carlinville—Work is being pushed night and day and on Sundays to complete the new shaft of the Superior Coal Co. between Sawyerville and Dorchester, 16 miles south of here. A new town has been platted, which will be called Wilson, and lots are being sold. A movement has been started to build a car line from Gillespie so that miners living there can work in the new mine without moving. The Superior company now operates three mines in the county. It began operations here in 1900.

Kincaid—The business section of Kincaid is threatened by a depression said to be due to a "squeeze" in a mine three-quarters of a mile distant. The ground has been sinking slowly for several days, due to collapses in mine levels, and in some places the depression is now two feet. Mining engineers say that buildings valued at \$50,000 are in danger. The sinking began several weeks ago near Jerseyville and extended to Kincaid.

Belleville—The Patterson Harding Coal Co., operating a mine in St. Clair township, has been incorporated with a capital stock of \$10,000. The incorporators are Enos Harding, Frank Patterson and Lucius D. Turner.

The O. K. Coal Co., of Marissa, has been incorporated with a capital stock of \$50,000. The incorporators are: J. A. Hamilton, 300 shares; W. E. Meek, 100 shares and R. J. Wilson, 100 shares.

Daniel Pollock, of Belleville, has announced himself as a candidate for state vice president of the United Mine Workers of America.

Bissell—After four years' idleness the old Clear Lake Coal Co.'s mine is about to be reopened under new ownership and management. G. H. Bourne has purchased the coal rights, consisting of about 250 acres, for \$15,000 from the Illinois National Bank and plans to reorganize the business. The property has twice passed through foreclosure proceedings. New buildings will be erected.

Springfield—Deeds of trust covering the two mines of the Midland Counties Coal Co., at Sherman and Pawnee have been filed in the recorder's office in Springfield. One is for \$700,000 to the Merchants' Loan and Trust Co., of Chicago, and the other is for \$4,000,000 to the First Trust and Savings Bank, of Chicago. The deeds secure issues of bonds and the security includes 45,000 acres of coal rights in Illinois and Indiana.

The Iowa State Public Utilities Commission has filed a petition with the Illinois Utilities Commission asking leave to become a party to the conference of Illinois and Indiana on the petition of steam railroads to increase the coal rate 15c. a ton. The evidence has been taken and it only remains for the commissioners of the three states to arrive at a conclusion. The roads want 15c. increase on coal, coke and iron ore. The increase was allowed by the Interstate Commerce Commission. An effort is now being made to have the increase set aside.

The State Mining Board met recently in Springfield in order to examine candidates for certificates as State Mine Inspectors, mine managers and hoisting engineers, first and second class.

MISSOURI

Jefferson City—Attorney General McAllister is making an investigation of purchases of coal made by John W. Scott, custodian of the Capitol building and grounds, from John W. Rhner, a Jefferson City coal dealer, at \$5 per ton, when the state had a contract with the West Virginia Coal Co., of St. Louis, to supply coal at \$2.90 a ton.

Kansas City—Records of the Southwest Coal Bureau were seized by a deputy under orders of Assistant Attorney General John T. Gose, who is conducting an investigation for the state into the alleged fixing of coal prices. W. E. Blucher, secretary of the bureau, when brought before the investigating committee, testified that the members held no meetings and that he was the sole officer. There were three directors, he said, but he was only slightly acquainted with them.

St. Louis—The jobbing and mine agents' interests of St. Louis and the Middle West have organized the Western Fuel Distributors' Association for the purpose of properly presenting to Coal Director Garfield the status of the distributors of fuel in the Western states. Edward Devoy is at the head of the association with E. J. Wallace, secretary, and H. S. Graves, treasurer.

W. J. Holbrook, who represents interests owning dock and terminal rights, has been in Washington and New York recently seeking Government aid through the Shipping Board for a line of boats and barges on the Mississippi River to relieve freight congestion. Chairman Hurley, of the Shipping Board, has announced that the board will take up the problem of developing inland waterway transportation and says he thinks the future has much in store for the Mississippi Valley in this regard.

A league is being formed among the 1400 employees of the Union Electric Light and Power Co. to purchase coal at the mines for the members. The league is promoted by the Employees' Mutual Benefit Association. Cards have been mailed to the employees asking them to indicate their fuel requirements. The plan will continue for the period of the war and is intended to be extended to the purchase of food.

UTAH

Salt Lake City—Coal producers representing the principal mines in Utah and nearly the entire coal output of the state met in the offices of the Independent Coal and Coke Co. in the Walker Bank building recently, when they turned the searchlight on Government prices to be exacted for coal for the first time. Many perplexing questions relative to the meaning of "prepared sizes of coal" were telegraphed to H. A. Garfield, the coal administrator.

Foreign News

Amsterdam, Holland—Eight thousand miners attended a recent mass meeting at Essen, Germany, for the discussion of coal production, food and wages. The meeting developed into an impressive demonstration in favor of peace by agreement and democratic reforms.

St. Etienne, France—An increase in coal production in the St. Etienne district of France, according to the report from the American vice consul, has been made possible by a readjustment of mine workers

and a closer study of transportation problems, the solving of which has caused an amelioration of the difficulties of this industry.

Vienna, Austria—In an effort to increase the production of coal, 12,000 Austrian miners were recently brought back to the mines from the front, but during August the authorities had been unable to effect any increase because of the under nourishment of the workers. Herr Von Hamann, Austrian minister of public works, declared that miners should be accorded extra rations, even at the expense of other classes of the population.

Stockholm, Sweden—Swedish newspapers published an outline of a proposal received from Germany for the use of Swedish labor in the German coal mines. The scheme provides for the sending of Swedish workmen to the German coal mines to dig coal for Swedish use, although a percentage of the coal thus dug must be delivered to Germany. Swedish workmen must bring their food and other necessary supplies from Sweden, and the coal must be loaded at Hamburg by Swedish laborers.

Personals

Morris Williams has resigned as president of the Susquehanna Coal Co. of Wilkes-Barre, Pennsylvania.

G. N. Snider has been appointed coal-traffic manager of the West Shore R.R., with headquarters in New York.

George Carmitchell, of Mahanoy City, Penn., an expert on mines, has resigned as foreman of the Tunnel Ridge colliery.

E. R. Hoffman has been appointed superintendent of the Meaco No. 1 and 2 mines of the Meaco Coal Co., near Homer City, vice Ralph E. Bucknam, resigned.

H. B. Coulter, of Moundsville, W. Va., has been appointed deputy inspector of mines for the Fifth Mining District, to succeed John T. McMahon, resigned.

T. S. Crockett, vice president of the Leckie Coal Co., Inc., announces the transfer of his office from Norfolk to Columbus, Ohio. A branch office will be maintained at Norfolk.

S. N. Fowler, formerly of the Life Saving Devices Co., Chicago, Ill., is now connected with the sales department of the Draeger Oxygen Apparatus Co., of Pittsburgh, Penn.

J. C. Lathrop will have charge of the new sales office of the Asbestos Protected Metal Co., of Pittsburgh, which has been opened in the Union Central Building, Cincinnati, Ohio.

Thomas Richardson, of Houtzdale, Penn., was recently named as a mine inspector on the staff of the Workmen's Insurance bureau. He will have charge of the Houtzdale territory.

E. D. Hanes, formerly trainmaster of the Virginian Ry. at Princeton, W. Va., has been appointed superintendent of coal terminals of the Virginian at Sewalls Point. Mr. Hanes succeeded W. A. Young.

George Crossland, formerly superintendent of the Naomi mine, a subsidiary of the United Coal Corporation, has resigned to accept a position in a similar capacity with the Brier Hill Coal Co., near Brownsville, Penn.

J. Henry Hall, manager of the Whitesburg Coal Co., Whitco, Ky., near Whitesburg, has been chosen as manager of the Mayking Coal Corporation at Mayking, Ky. Mr. Hall will divide his time between each place. He is well known by the coal trade throughout the country.

C. P. Stempel has recently been appointed to the newly created position of general superintendent of the Virginian Ry. Mr. Kerwin, vice president, will take over the duties of Mr. Berlingett, general manager, who recently resigned. The position of general manager has been abolished.

Obituary

John Edgar, paymaster for the Susquehanna Coal Co., died recently at Forty Fort, Penn. He had been affiliated with the company for 47 years.

George W. King, president of the Marion Steam Shovel Co., of Marion, Ohio, died on Sept. 9. Mr. King was well known to the trade throughout the United States.

August Meyer, a pioneer operator in St. Clair County, Illinois, died at his home in St. Louis recently at the age of 50 years. For the past 20 years he had been in the coal business in St. Louis.

Charles B. Lovatt, of Philadelphia, Penn., died at his home on Sept. 9. Mr. Lovatt had been for many years connected with Castner, Curran & Bullitt and since the incorporation of the firm had been its auditor.

Andrew C. Bryden, well known in the southern Illinois field, died in St. Louis recently, at the age of 81 years. He had an interesting and busy career, and at one time operated at Murphysboro and Harrison, what is now known as the Big Muddy Coal and Iron Co.'s mines. He is survived by his widow, four sons and two daughters.

Recent Coal & Coke Patents

Method of and Apparatus for Storing and Discharging Coal. H. Adams, assignor to Adams Coal Machinery Co., New London, Conn. 1,234,709, July 31, 1917. Filed Dec. 28, 1916. Serial No. 139,293.

Burning Pulverized Fuel. V. Z. Caracristi, assignor to Locomotive Pulverized Fuel Co., a corporation of Delaware, 1,234,820, July 31, 1917. Filed Nov. 5, 1913. Serial No. 799,269.

Car-Holding and Releasing Mechanism for Mine Cages. D. F. Lepley, Connellsville, Penn. 1,235,210, July 31, 1917. Filed Oct. 26, 1915. Serial No. 57,994.

Mining Machine. H. A. Kuhn and W. W. Macfarren, Pittsburgh, Penn. 1,234,912, July 31, 1917. Filed Apr. 13, 1909. Serial No. 489,716.

Dump Car. W. L. Burner, assignor to Kilbourne & Jacobs, Manufacturing Co., Columbus, Ohio. 1,236,368, Aug. 7, 1917. Filed May 15, 1916. Serial No. 97,607.

Furnace for Burning Coke and Charcoal. F. E. Kabase, Birmingham, Ala. 1,236,573, Aug. 14, 1917. Filed Sept. 28, 1916. Serial No. 122,664.

Method of Mining Coal. H. A. Kuhn, Pittsburgh, Penn. 1,237,061, Aug. 14, 1917. Filed May 18, 1914. Serial No. 839,326.

Dumping Apparatus for Cars. R. H. Rogers, assignor to General Electric Co., Schenectady, N. Y. 1,237,099, Aug. 14, 1917. Filed Jan. 27, 1916. Serial No. 74,589.

Acetylene Miner's Lamp. N. Llewellyn, Cainesville, Mo. 1,238,032, Aug. 21, 1917. Filed Dec. 13, 1916. Serial No. 136,783.

Excavator Bucket. R. M. Downie, assignor to Keystone Driller Co., Beaver Falls, Penn. 1,237,878, Aug. 21, 1917. Filed Feb. 25, 1916. Serial No. 80,479.

Side-Dump Car. H. T. Anderson, assignor to Standard Steel Car Co., Pittsburgh, Penn. 1,237,445, Aug. 21, 1917. Filed Dec. 12, 1911. Serial No. 665,369.

Miner's Lamp. F. E. Baldwin, New York, N. Y. 1,237,449, Aug. 21, 1917. Filed May 20, 1913. Serial No. 768,775.

Automatic Steam Jet Furnace Stoker. A. Cotton, Newark, N. J. 1,237,304, Aug. 21, 1917. Filed July 29, 1911. Serial No. 641,302.

Hoisting Apparatus. A. E. Norris, Cambridge, Mass. 1,238,184, Aug. 28, 1917. Filed Sept. 8, 1911. Serial No. 648,278.

Ash Pan. H. S. Nelson, Coeur d'Alene, Idaho. 1,238,555, Aug. 28, 1917. Filed Dec. 5, 1916. Serial No. 135,206.

Tunneling Machine. F. Stolzenburg, New York, N. Y. 1,238,592, Aug. 28, 1917. Filed Apr. 8, 1916. Serial No. 89,836.

Industrial News

Nashville, Tenn.—The Semet-Solvay Co., Syracuse, N. Y., is planning the construction of a \$2,000,000 by-product plant here.

Pottsville, Penn.—The Philadelphia & Reading Coal and Iron Co. is planning for extensive improvements in its collieries in the Shenandoah section.

Beaver Meadow, Penn.—The Evans Coal Co. has commenced the erection of a new breaker and expects to place it in operation within the next three months.

Norfolk, Va.—The Virginian Ry. recently placed some new 120-ton steel gondola coal cars on their road for experiment. These are the largest coal cars ever built.

Pittsairn, Penn.—The Pennsylvania Railroad Co. is planning for the construction of a local coaling station, with bunkers of 1200 tons capacity, to cost about \$100,000.

Wilkes-Barre, Penn.—The Esslinger Coal Co. has been incorporated with a capital of \$50,000 to operate coal-mining properties. F. K. Lengler, Scranton, is the principal incorporator.

Jersey City, N. J.—The Pennsylvania Railroad Co. has awarded a contract for the construction of three new coal pockets at the pier of the Susquehanna Coal Co. in its Greenville yards.

Knoxville, Tenn.—The Southern Railway has laid off four coal trains a day, on account of the strike. Three operated between Middlesboro, Ky., and Knoxville, and one between Jellico, Tenn., and Knoxville.

Mayking, Ky.—The Mayking Coal Corp. will construct 100 additional miners' houses, build a 3-mile branch of railroad and construct a bridge across the Kentucky River. New mines are to be opened and the output of the plant greatly increased.

Birmingham, Ala.—The Interstate Commerce Commission has tentatively approved the reduction of free time from ten to five days for the unloading of bunker coal at New Orleans, Mobile and Pensacola. Definite action will be taken by the Commission at a later date.

Elk Garden, W. Va.—The Elk Garden Big Vein Co. has been incorporated with a capital of \$50,000 to operate coal mines in the Elk district, Mineral County. S. A. Dixon, Elk Garden; Howard E. Cross, Emoryville; R. G. King, T. F. and J. J. Sheehan, Baltimore, Md., are the incorporators.

Charleston, W. Va.—One of the largest coal deals ever closed in this section was consummated recently. John Laing, of Charleston, and A. J. Dalton and associates, of Cincinnati, purchased the mines and holdings of the Main Island Creek Coal Co. for a consideration said to be in the neighborhood of \$1,000,000.

Pittsburgh, Penn.—Because of a shortage of coal cars which prevents the filling of coal contracts for local power plants, power being supplied Pittsburgh manufacturers will be cut off for a day or part of a day each week, in rotation, according to a statement issued recently by the Duquesne Light Co. which supplies power to a large proportion of the city.

Sharon, Penn.—Steel mills of the Pittsburgh and Youngstown districts report a serious shortage of coal. Many of the plants are using coal as fast as it is received and are unable to get a supply on hand. It is said the railroads are largely responsible, as there were not sufficient cars. Unless relief comes soon it is probable some mills will be forced to close.

Duluth, Minn.—"Midland Prince," a steamer of Montreal, Canada, owned by the Canadian Steamship Line, unloaded 6000 tons of American coal here today. It was the first vessel of Canadian register to carry a cargo of American coal to an American port since the lifting of the regulation barring foreign vessels from entering United States coastwise and Lake traffic.

Uniontown, Penn.—T. J. Mitchell, formerly general manager of the W. J. Rainey interests in the Connellsville region, has purchased for himself and associates the plant of the Greenough Coal and Coke Co. on the Chesapeake & Ohio R.R. in Pike County, Ky. The new owners will spend \$100,000 on improvements, which will include the installation of modern electrical equipment.

Columbus, Ohio.—Through efforts on the part of Governor Cox, of Ohio, and other state officials, it is believed that the priority rule of Mr. Lovett, ordering all coal to be shipped to the Northwest, may be modified, in Ohio at least, in order to permit domestic users and steam plants to get some coal. Attorney General McGhee went to Washington in an effort to get the priority rule modified.

Pittsairn, Penn.—By Oct. 1 the Pennsylvania R.R. expects to have completed a \$100,000 coaling station for its locomotives at Pittsairn. The bunkers from which the engines will take on their fuel supply will have 1200 tons capacity. This plant will also do away with the old "grab-bucket" system for coaling locomotives, and will do the work quicker and at a great saving in labor.

Connellsville, Penn.—The Mellons of Pittsburgh, and D. B. Zimmerman, of Somerset, will open 15 mines in the Indian Creek Valley, Fayette County, where they control 20,000 to 30,000 acres of thin vein coal, according to an announcement made here. Three openings have been started and others will be made as rapidly as they can be equipped. Ground has been broken for a town at Indian Head to house employees.

Johnstown, Penn.—One of the largest coal deals in Cambria County has just been recorded at Ebensburg, when titles to more than 12,000 acres of coal land in Cambria and Jackson Townships were transferred to the Pennsylvania Coal and Coke Corporation, for a consideration said to be over \$2,000,000. The land was optioned 20 years ago for \$20 per acre. The selling price shows the value to be 10 times the option price then given.

Alphoretta, Ky.—The Long Fork Branch of the Baltimore & Ohio, up the left fork of Beaver Creek into a rich coal field—one of the richest in eastern Kentucky—is nearing completion, track laying having been started. It is expected that trains will be put on the road—over its entire distance—by Oct. 1. A large number of coal-operating companies will develop in that section. The road's terminus is Weeksbury, the new "overnight" town of the Elkhorn Gas Coal Mining Co.

Pineville, Ky.—The properties of the Continental Coal Corporation, which has been in bankruptcy for the past several months, have been purchased by the Federal Coal Co., organized at the time of the bankruptcy to take over and operate the properties. The sale was at the courthouse door here by Trustee C. M. Preston, of Chattanooga, Tenn., and the price paid was \$1,400,000. The Continental was the largest Kentucky coal operating company, owning about 28,000 acres and operating mines on Straight Creek.

Huntington, W. Va.—The Pocahontas Logan Coal Co. has been incorporated with a capital of \$8,000,000 to develop 10,000 acres of mining properties in West Virginia. The company is a consolidation of the following 11 companies: the Slab Fork, Albert, Guyan Valley, Alene, New Pocahontas, Deegans-Eagle, Pocahontas Smokeless, Orville and Faulkner coal corporations, and the Franklin Mining Co., and Paragon Collieries Co. William E. Deegans is the principal incorporator and will head the new organization.

Pittsburgh, Penn.—Because of the increased demand for anti-friction mine-car bearings, the Hyatt Roller Bearing Co., of Newark, N. J., has found it imperative to open a Pittsburgh office, where Walter J. Kearns, engineer in charge, will be in a position to render prompt and efficient service. The new office is at 1272-1273 Frick Annex, Bell phone Court 4169. While Mr. Kearns makes his headquarters at the Pittsburgh office, he can be reached by mail or telephone, if necessary, at his residence, 3 Nutt Ave., Uniontown, Penn.

Columbus, Ohio.—Louis J. Guthke, purchasing agent for Columbus, announced that a gentlemen's agreement has been made with the George M. Jones Coal Co. for coal for the various city departments at \$3.05 per ton at the mines. This agreement was made prior to the fixing of prices by the President. An ordinance appropriating \$16,600 for fuel for the electric light and garbage-disposal plants for the coming month has been adopted by the City Council. An ordinance appropriated \$20,000 for fuel for the water-works department is still pending.

Washington, D. C.—Reports show that the railroads have already effected an extraordinary improvement in the amount of coal handled in the country as a whole. Reports to the United States Government, just available, show that in June the railroads hauled \$750,323 cars of bituminous coal, an increase of 26.2 per cent. over June last year. That the railroads are also providing a much more nearly adequate transportation service for all freight is indicated by the fact that unfilled car orders, or what is called the "car shortage," shows a reduction on June 20 of nearly 50 per cent. from the situation on May 1.

Indianapolis, Ind.—Under the personal direction of E. M. Costin, General Superintendent of the Big Four Route, that carrier is establishing a huge pile of coal at Beach Grove. The purpose is to have in reserve an adequate supply of coal this fall and winter. This plan also has in view the release for commercial purposes this winter of coal cars which otherwise would be used in hauling the road's own fuel supply. It is the intention of Mr. Costin to place in this pile 285,000 tons of coal. At the present time 62,000 tons of coal are piled on the ground at the Beach Grove shops. A total of 1296 cars have been unloaded.

Toledo, Ohio.—Shipments of lake tonnage at the Toledo docks showed a marked falling off for the week ending Aug. 31. This is due largely to strikes in the Hocking Valley and a short car supply on several of the important coal carrying roads. The Hocking Valley docks loaded 96,000 tons during

the week ending Aug. 31 as compared with 147,000 tons the previous week. The Toledo and Ohio Central docks loaded 89,463 tons as compared with 102,620 tons the previous week. The Toledo and Ohio Central docks have loaded 1,240,873 tons since the opening of navigation and the Hocking Valley docks have loaded 2,584,421 tons for the season.

St. Louis, Mo.—Attorney-General McAlister has announced that he will ask Coal Director Garfield to abrogate the contract existing between coal operators and retailers in Missouri where these are made the basis for exorbitant prices to consumers. He has written to Garfield, calling his attention to contracts which are fixed on an increasing scale from month to month \$2.75 per ton for April and increasing 25c a month until September. T. T. Brewster, president of the Fifth and Ninth Districts Operators' Association, says that practically all operators having such contracts with dealers have given the dealers the option of cancelling.

Kansas City, Mo.—Records, by the use of which coal operators of Kansas City are charged to have controlled the price and output of coal mined in Kansas and sold in this city, were seized recently by a deputy acting under an authorization issued by John T. Gose, assistant attorney general of Missouri, who is conducting a coal investigation for the state. The records were the property of the Southwest Coal Bureau, according to the testimony which disclosed it as an association of coal operators. W. E. Blucher, secretary of the bureau, was subpoenaed before the investigating committee immediately following the seizure of the records.

Toledo, Ohio.—The Toledo docks in the week ending Sept. 7 were considerably more active than during the preceding week, due to a better car supply and the settlement of labor troubles in the Hocking Valley. The Hocking Valley docks handled 179,000 tons during the week, as compared with 96,000 tons the week previous. The total handled by the docks since the opening of navigation is 2,763,276 tons. The Toledo & Ohio Central docks handled 101,000 tons during the week, as compared with 89,000 tons the previous week. The total handled by the Toledo & Ohio Central docks since the opening of navigation is 1,302,341 tons.

Edwardsville, Ill.—Thomas Williamson, an Edwardsville attorney, is closing options, as trustee, for more than 20,000 acres of coal lands, extending over a territory of 50 miles between Edwardsville and Nilwood, a distance of 50 miles. A. N. Crawford and A. W. Crawford, of Carlinville, are the promoters. The coal rights involve about \$1,250,000. Large Chicago interests are understood to be in the deal. Through the field pass the Wabash, the Chicago & Alton, the Chicago & Eastern Illinois, the Chicago, Peoria & St. Louis and the Illinois Traction Co. The Northwestern Railroad Co. has developed adjacent fields extensively and may have an interest in the new field.

St. Louis, Mo.—What promises to be one of the largest coal deals in the history of Illinois has been revealed by the recording of a dozen coal-right deeds at Carlinville. The plan eventually will mean the opening of twenty-five or thirty of the best-equipped mines in the state. The land lies between Edwardsville and Nilwood, a distance of 50 miles, and it is estimated at 30,000 acres. The value of the coal rights is said to be \$1,250,000. A. W. Crawford and A. N. Crawford, of Carlinville, are the promoters. Chicago interests, it is understood, are in the background. The Northwestern R.R. has extensive holdings in the field, through which pass the Wabash, Chicago & Alton, Chicago & Eastern Illinois, Chicago, Peoria & St. Louis and the Illinois Traction Company (McKinley system).

Columbus, Ohio.—Ohio railroads on Aug. 30 put into operation a horizontal increase of 15c a ton in coal freight rates in this state, granted by the action of the Ohio Public Utilities Commission. The new tariffs were filed with the commission more than two months ago, but were suspended at two different times pending a hearing by the commission. The utilities commission in its latest action has allowed the tariffs to take effect "without affirmative action by the commission." This enables the commission to render a decision either for or against the rates if future developments should make such action warranted. The interstate commerce commission had already allowed the tariffs sought, and by the action of the state commission Ohio carriers now have a differential of 40c a ton in favor of Ohio coal against West Virginia coal. If it is found desirable the Ohio commission can reopen the case whenever it wishes and prevent the operation of the tariffs.

Market Department

GENERAL REVIEW

Demand for spot coal, especially that employed for steam raising, is heavy, with practically no supply. Sales on the \$2 basis for bituminous are exceptional, and some industrial plants are suffering.

Anthracite—The production of anthracite is running perhaps higher than at any time in the history of the industry, and this fuel is moving to market rapidly. The demand for steam sizes is especially good. Shipments to the Great Lakes and to New England are in greater volume than previously, but New England buyers would be uneasy were it not for the stocks of coal already accumulated in that section against the time of need. New England water power is especially good this fall, which is tending somewhat to relieve the demand for coal. Domestic grades in New York are in short supply and but few dealers will quote a time of delivery. The same is true to a less extent concerning most places throughout the East. The cold weather during the week has had a tendency to stimulate purchases of the domestic sizes of anthracite. The steam grades of this fuel are in particularly strong demand since supplies of bituminous steam coals cannot be had except on contract and steam users are naturally turning to the small sizes of anthracite wherever their furnaces are at all suitable for burning this fuel.

Bituminous—The demand for bituminous coal is growing stronger, and, if anything, more insistent, while the supply is slightly decreasing. What coal of this description is moving is moving on contract and sales of spot coal at the \$2 basis are few and far between, the volume of such coal being practically negligible. Some mines not provided with contracts have closed down, and others are working short time on account of poor car and labor supply. At a time when most industrial plants could be making good money, some of them have been obliged to curtail operations and others have shut down entirely. It is reported from Maryland that some of the canneries which supply their fuel needs from the spot market, buying coal only as it is required, have been unable to operate on account of an inability to secure fuel, and the fruit and vegetables, about the preservation of which the country has heard much in the past few months, are rotting on the ground. At New York, it is not uncommon for vessels to be held up in the bay for the reason that bunker coal cannot be supplied. Dealers and consumers throughout the entire country are scouring the market to secure whatever supplies of fuel are available and, in most instances, are getting in return only a small portion of what they desire to secure.

Lake Trade—The coal trade on the Great Lakes is progressing rapidly, and large tonnages are being shipped to the Northwest. It is predicted that if the Lakes remain open for a reasonable time after navigation officially closes, there will be no scarcity of coal in the Upper Lake region.

Middle Western—There is a pronounced shortage of both cars and labor throughout the Middle West region, and this condition is becoming acute. Certain embargoes on Eastern roads are interfering with the shipment of Eastern coals to Western markets. This is particularly true of the smokeless and splint coals of West Virginia. Indiana mines, in particular, have been working on short time, in many instances averaging less than half time, due to car shortage. Throughout the southern Illinois region, this shortage has not been so pronounced, and the mines have operated to about 75 per cent. of their full time rating. A considerable improvement has been noticed in the market, this applying particularly to domestic coals and probably induced by the cooler weather. Practically no coals from points east of Indiana are reaching the Southwestern markets.

A Year Ago—Anthracite trade active, making up deficiency resulting from light summer buying. Bituminous demand becoming still more insistent. Reserve stocks at a minimum and efforts to increase production meet with little success. Middle Western situation remains firm.

COAL PRODUCTION

A partial recovery from the depression of the preceding week was registered by the ratio of tonnage produced to full-time capacity for the week ended Aug. 25. Mines in twelve states, representing more than one-third of the output of the country, reported a production amounting to 68.5 per cent. of their full-time output as limited by the labor force at present available. As compared with the ratio for the week ended Aug. 18, this was a substantial improvement, but the index is still far below the level attained in July. The recovery was largely due to the partial cessation of the Illinois strikes, which raised the ratio for that state from 54.8 to 69.3 per cent. The loss of working time in eastern Kentucky and Tennessee became even more acute. Mines in this area realized but 4.7 per cent. of their full-time output.

PER CENT. OF FULL-TIME OUTPUT PRODUCED IN WEEK ENDED

State	July 28	Aug. 4	Aug. 11	Aug. 18	Aug. 25
Iowa.....	87.3	87.5	82.6	85.3	86.3
Illinois.....	76.0	72.6	70.3	54.8	69.3
Indiana.....	67.8	69.5	63.2	71.8	69.3
Ohio.....	69.4	73.7	70.2	73.2	68.6
Western Penn.....	76.3	78.1	78.2	69.4	75.2
Winding Gulf region, W. Va.....		70.5	77.1	83.0	88.7
Southwestern Va.....	95.8	94.9	94.0	93.9	94.1
E. Ky., and Tenn.....	82.6	68.6	74.2	10.8	4.7
Alabama.....	91.4	88.4	88.8	85.9	86.1
Kansas & Missouri.....	69.5	69.4	64.9	72.2	76.2
Oklahoma & Ark.....	79.0	63.4	66.0	65.5	70.0

Total reporting from beginning, 75.3 73.0 71.8 62.5 68.5

The same recovery from the slump of the week ended Aug. 18 is shown by comparable statistics of coal originated by the principal bituminous carriers. Shipments for the week ended Sept. 1 in turn slightly exceeded those for the week of Aug. 25. Illinois, Indiana, western Kentucky, Pennsylvania and Ohio recorded increases more than sufficient to counterbalance the abnormally low shipments of the Southern Appalachians, still affected by the strike.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS WEEK ENDED

District	Aug. 18	Aug. 25	Sept. 1
Alabama, East. Kentucky and East. Tennessee.....	6,755	5,368	5,550
Illinois, Indiana, and Western Kentucky.....	20,927	22,423	22,938
Pennsylvania and Ohio.....	44,350	47,058	47,622
West Virginia and Virginia Smokeless.....	13,258	14,021	13,664
West Virginia and Virginia High volatile.....	18,897	18,799	18,247
West of the Mississippi.....	1,700	1,762	1,923
Total.....	105,887	109,431	109,944

BUSINESS OPINIONS

Iron Age—Readjustment in iron and steel values is slow-paced and the Government situation is more complicated if anything. A significant fact is that representatives of some of the Entente Allies are again actively negotiating on their own behalf, indicating the suspension, for the time at least, of efforts to get steel for them through the War Industries Board at the prices to be fixed later for the Washington Government. The Attorney General has given an opinion that manufacturer members of advisory committees may continue their activities at Washington, by declaring their interest in each Government contract that may be taken by their companies. The steel committee has not resumed its functions, however, as the opinion is considered vague on some points and machinery is lacking for complying with the conditions imposed. There is a steady run of Government buying while the major war program is being worked out: Government purchases, in fact, make up the bulk of current business. Individual consumers, in the general belief that the market will continue to decline, are doing no buying that can be put off.

Dun—Waiting is still the rule in not a few quarters, though in the main business is rather less hesitant and the advancing season is calculated to stimulate those

branches which have experienced the usual summer halting. With lower temperatures, working conditions are also better, but the enlargement of manufacturing capacity does not in all cases assure augmented outputs, for the labor problem grows more difficult with the draft in operation, and even where supplies of raw materials are adequate, the obstacles in transportation not infrequently impede their movement to points of destination.

Bradstreet—Governmental buying, fall festivals, visits of country merchants, good crop prospects, activity in manufacturing, the coming of autumn and the concededly favorable outlook for fall trade have brought about an upward trend in business. Governmental buying, in a class by itself, takes precedence over other operations, yet trade in products needed by the public at large has broadened, and displays of fall goods have caused retail distribution to revive. Nevertheless, uncertainty about the extent to which price fixing by the Government will extend checks various enterprises, has forced some to temporarily slow down, and at the same time the subject of taxation on excess profits engenders uncertainty while halting plans for expansion.

Dry Goods Economist—Generally lower speculative prices for raw cotton on the New York Cotton Exchange and a belief with many that futures would show a downward price tendency, added further weakness to prices for print cloth convertibles held by speculators who have shown a disposition of late to lower their stock. Converters, however, reported that prices for gray cloths with mills showed no material change, as mills are well supplied with orders for Government and converters' use. Inquiries from Government sources for the week amounted to one million yards of assorted cottons, including ducks.

Marshall, Field & Co.—Current wholesale distribution of dry goods equals the volume of the corresponding period of a year ago, which was the largest in our history up to that time. Road sales for immediate shipment are running about the same as in the same period of 1916, while those for future delivery are considerably ahead. More merchants have been in the market during the week. Collections are good.

Atlantic Seaboard

BOSTON

New England consumers would be apprehensive over inability to buy spot coal were it not for two to three months stocks on hand. Good water power a factor not always realized. A few plants are already affected by market deadlock. Quotations on \$2 net ton basis extremely rare. Anthracite shipments slightly better.

Bituminous—While there is a feeling that progress is being made toward some adjustment of the price situation, there is still an utter lack of authoritative information. Operators and sales agents are continuing to turn down inquiries, while at the same time every effort is made to keep up shipments on orders undertaken before the President's order was issued. Soon some of the smaller operations will lack consignments and the trade will then be in position to begin to measure the effect of the Government action.

That the latter is bound to curtail production seems universally conceded, but for the present it is non-effective. In this territory, as elsewhere, fuel consumption is much larger than normal and those plants that relied upon hand-to-mouth purchases are on the verge of serious curtailment. Still others consistently accumulated coal during May, June and July, and have a comfortable margin for the next month or two.

Water power has been unusually good and this has been an advantageous circumstance to many of the textile mills. Then, too, early August buying was heavy and deliveries on these purchases will continue for some weeks to come. Practically every industry has all the business it can handle, and yet no coal shipper dares ask more than the \$2 basis nor is any shipper ap-

parently willing to sell his output at this level. Coal is in good active request, yet there is practically no spot coal to be had.

The trade has followed with much interest the circulars issued by the Federal Fuel Director. The statement that persons associated with the distribution of coal will not be eligible for the local committees puts the usual premium on misinformation. Among three or five on such committees one member with some practical knowledge of the coal business would not be too great a concession.

Except for an occasional "forced sale" to free cars at Hampton Roads there is practically no spot business on Pocahontas or New River. The movement to the Northwest continues heavy, and receipts here are already somewhat affected. Offerings of Pocahontas and New River for inland delivery from points like Providence and Boston have practically ceased.

George's Creek receipts here are almost nil. The tonnage coming to tide-water is light this year anyway, and the western priority order operates so strongly against New England that cargoes here are a great rarity.

A few buyers profess having bought Pennsylvania steam grades at \$2 net ton as a result of the Government ruling, but such statements are hard to run down. Any general offering on the \$2 basis, is not looked for in this market.

No tonnage is open to spot sale, apparently, at the New York or Philadelphia loading piers. Diligent inquiry fails to disclose any responsible house willing either to sell on the \$2 basis, or to run counter to the Federal ruling.

We are still in no position, therefore, to list quotations on any of the grades. Contract shipments are coming forward quite regularly and so long as that is the case we see no prospect of radical change in the near future.

Anthracite—Receipts from Philadelphia have improved slightly, but New York shipments are still slow. Most retailers have been obliged to accept liberal proportions of chestnut in their cargoes the past few weeks, but egg and stove are again available in sparing quantities.

Reports of the Federal Trade Commission on the retail situation in various cities confirm the extent of the shortage, even as compared with 1916 which was behind 1915. The figures reported are compiled from actual examination of dealers' books.

There is no let-up in the demand in any direction, so far as we can learn. The companies that have been shipping regularly to this market this year are doing what they can to keep dealers in business. Other shippers, however, are doing little.

Apparently, pea is in just as good request as ever, notwithstanding the recent advance. Retailers are still obliged to take on quantities of "independent" coal, although prices are now adjusted to the 75c. premium allowed to mines not "railroad-owned."

NEW YORK

Stocks of anthracite domestic coals low, with an urgent demand. Call for the buckwheat coals is strong, owing to the scarcity of bituminous. Barley is long. Bituminous operators hopeful of an early revision of prices. Industrial plant owners complain of lack of coal and write the Washington authorities. Heavy shipments to the West may cause trouble in the East. Shipping delayed because of lack of supplies.

Anthracite—The trade has settled down to its fall business in earnest, with a heavy demand for the domestic coals and little coal to meet it. There is an urgent call for supplies from every direction and while the operators and shippers say the receipts here are nearly normal, dealers have no stocks on hand. Retail dealers have less coal in their yards than in many years but they have placed more in cellars than heretofore. At the same time many of them have unfilled orders aggregating several thousand tons on their books. The only activity is in the steam coals.

Unlike the bituminous situation there is no confusion over prices, the only change having been made in the selling price of pea coal. Already opposition to the advance has arisen in some localities and it is contemplated by some organizations to send petitions to Washington asking for a revision of prices. In this city the retail dealers have not changed their prices and no change is thought of at this time.

The local trade is interested in the efforts of the bituminous mine workers to secure an increase in wages, realizing that if they are successful a similar increase might be asked for by the anthracite mine workers.

While there is an urgent demand for egg, stove and chestnut, the call for the last named size is less strong than for the others. Independent product is less plen-

iful at the loading docks than company coals. Dealers complain of slow shipments and there is much anxiety because of their inability to obtain sufficient coal to fill outstanding orders. Pea coal, the other domestic size, is scarce.

Much of the activity in the steam coals is due to the scarcity of bituminous and prices being held tighter than is usually the case for this time of the year. Barley is longer than either of the other two sizes. Some idea of what dealers think of the future of these coals may be gotten from the prices submitted to one of the City Departments last week which ranged from \$7.67 to \$8.15 for Buckwheat No. 1 and \$5.96 to \$6.46 for barley.

Current quotations, per gross tons, f.o.b., Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken.....	\$5.95	\$6.70
Egg.....	5.85	6.60
Stove.....	6.10	6.85
Chestnut.....	6.20	6.95
Pea.....	5.30	6.05
Buck.....	3.95@4.15	4.80@5.00
Rice.....	3.40@3.60	3.75@4.00
Barley.....	2.90@3.10	2.30@3.00
Boiler.....	3.15@3.30	

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—While there is not much activity in the local market, tradesmen have a better feeling as to the future and are hopeful of a revision in prices. Meanwhile the situation continues quiet with little coal moving, except on contract. Production depends largely upon the size of the contracts held by the operator.

There has been no let-up in the demand here and some shippers believe it is becoming more urgent. Conditions at many nearby industrial plants are more acute and the owners are doing everything possible to get supplies, some even going so far as to write the Washington authorities complaining of the lack of coal and telling of their efforts to secure fuel.

Meanwhile operators and shippers are adhering strictly to the Government prices and turning down many new orders. Large plants which ordinarily are able to get sufficient coal to operate on their contracts are endeavoring to pick up free coals owing to the longer operating hours but are meeting with little success. Contract coal is moving in good shape, but most consumers are willing to take more than they are getting.

Operators and shippers are carefully watching developments from the almost daily conferences being held in Washington and expect that the outcome will be a change in the price-list. Meanwhile, the mine workers are becoming restless and are asking the operators in some districts for higher wages.

The heavy shipments made to the Western markets by direction of the Federal authorities will in the opinion of many coal men, result in serious conditions in the East this winter. This is especially true of districts which depend greatly upon the Fairmont coals.

The lack of free coals is delaying shipping, the harbor being liberally dotted with vessels that cannot go to sea because of the lack of bunker fuel.

It is said that some middle houses that contracted heavily with operators previously to the fixing of the new prices are being hard pinched because of their failure to dispose of their coal before the new prices went into effect.

PHILADELPHIA

Anthracite trade stirred by cool weather. School opening adds to rush. Rumor of Government price change. Retail prices vary. No standard retail prices for several months. Trade Commission asks dealers for new reports. Bituminous trade condition chaotic. Hope for better prices grows stronger. Supply of coal short, as well as cars.

Anthracite—With cool weather prevailing, the retail trade has been somewhat stirred by the demands for coal. Mostly the requests were for half-ton lots and principally for pea size. Of course, not all dealers were able to supply this size, but the turning of the trade over to chestnut was not so difficult. While the dealers met the demands in good shape, yet they have a feeling of uneasiness at this foretaste of rush times.

The demand at this time was, of course, only for fuel for cooking stoves, as most people desire to have a fire in the house to take off the chill, but when the need for the regular heating furnaces arrives some dealers fear they will be unable to meet the demand.

The present rush is also further augmented by the opening of the schools and the return to the city of many families whose homes have been closed since early summer. The dealers now find themselves in a quandary to supply the coal on orders placed since spring. This is the business the retailers neglected for higher priced orders that came later, but which now must be given attention.

There is a rumor current that the Government intends to revise the prices as issued for the season commencing Sept. 1 and it would seem that the news is based on something more substantial than mere rumor. Most of the talk seems to center about the price of pea coal and it would not be surprising if the order came to reduce this size to \$3.50 beginning with Oct. 1. Other interests seem to feel that in this event about 10 cents per ton might be added to the prepared sizes.

The winter prices as announced by the retailers vary. One large company is quoting egg at \$8.25 stove at \$8.50, chestnut at \$8.75 and pea at \$7.75. The latter is based on \$4 pea coal at the mines.

The retail trade was a little upset this week by receiving requests from the Federal Trade Commission for further information regarding the business. Retailers were asked to fill in forms showing their stock on hand on Sept. 1, as compared with this time last year. Their receipts for August, 1916, and August, 1917 with the prices paid and the prices charged their customers. It is likely that the margin between the cost and selling price for August this year is greater than for years. This is accounted for by the increased cost of everything entering into the dealers' business. Dealers claim this can easily be proven, but they must have the opportunity.

The steam sizes are showing a little more strength, probably due to the cool weather and the approaching season when they will be needed for heating purposes. Buckwheat is the most popular of the junior sizes and is bringing around \$3.50. Rice and barley are not strong and are selling close to \$2 and \$1 respectively.

Both the wholesale and retail men claim they never had their accounts in better shape. Sixty-day business is not sought by either branch of the trade, which in times past was the custom.

The prices per gross ton at the mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line Tide	Line Tide
Broken.....	\$4.55 \$5.90	Buck..... \$2.90 3.30
Egg.....	4.45 5.80	Rice..... 2.40 3.40
Stove.....	4.70 6.05	Boiler..... 2.20 2.90
Nut.....	4.80 6.15	Barley..... 1.90 2.15
Pea.....	4.00 5.15	

Bituminous—The bituminous trade continues in the same chaotic condition prevalent since the Government prices were announced a few weeks since. Production is in no way commensurate with the demand and local consumers are extremely anxious to secure shipments. It goes without question that the standard fixed prices are adhered to, but the effect of increased prices are still quite numerous from concerns who are in dire need of fuel and yet who fail to understand the seriousness of the case should any shipper receive more than the Government figure for his coal.

The car supply continues to be in about the same proportion as has prevailed for weeks past and many operations report being unable to operate full time on this account. Because of this there is practically no coal to be had at \$2, as even with the entire production most contract business is short.

Local shippers are beginning to take some encouragement from the statement of the Fuel Administrator that the prices of bituminous coal may be adjusted in the near future and laying stress on the fact that prices first announced were purely tentative.

BALTIMORE

Coal situation grows acute while fuel men await solution from Washington. Operators hotly protesting price. Hard coal prices advance and supplies a little easier.

Bituminous—Looking to Washington still for an early solution of the great fuel tangle that has arisen through Government price regulation, the trade here finds that it can purchase no \$2 coal, that even contract fuel is running in light supply, apparently due to the fact that the entire mining world is in a state of unrest, and stocks and supplies at tide are becoming so light as to cause distinct uneasiness as to the near-outlook.

Big plants here are at present either drawing upon their stocks to aid what contract coal they can secure, or are borrowing contract coal from other industries that can

spare them a part of their deliveries. Some few may be getting through coal bought practically spot at higher than Government figures, but no one will admit such transactions. That there has been much dating back of orders to tide over the present tight situation, pending Government solution of its own-created problem, is more than probable.

Anthracite—Anthracite supplies are coming through a little better, although all the coal men here are far back on their orders. The September retail advance of 10c. a ton has been inaugurated, making prices here at present as follows: Broken, \$9.20; egg, \$8.90; stove, \$9.15; chestnut, \$9.15; pea, \$8.30. Sunbury, egg, \$9.15; stove, \$9.40; chestnut, \$9.55. Lykens Valley, egg, \$9.65; stove, \$9.90; chestnut, \$9.90. Buckwheat coal, \$6.70.

HAMPTON ROADS

Stocks still large. Heavy shipments coastwise. No sales reported at Government price. Good dumpings past week.

The terminals still report good stocks on hand, which do not seem to have been diminished to any great extent by the large tonnage dumped during the past week. The bulk of the tonnage has moved coastwise under contract, also considerable coal has been taken by the Navy Department. Navy requirements are expected to be heavier this week than for some time past.

Foreign inquiry is fairly good, but few quotations seem to have been made as it is not quite clear to the trade whether or not the price fixed by the Government applies to the export and bunker trade. It does not seem reasonable that it should as it is hardly possible that the Government would fix a maximum price to be charged the foreign consumer.

The foreign customer would then benefit at the expense of the citizens of this country. A number of shippers are awaiting some definite expression from Washington on this point. In the meantime there is a difference of opinion regarding this class of business. As far as can be ascertained there have been no domestic sales since the proclamation of the President fixing the mine price, at either the fixed price or any other.

Shippers are confining themselves to contract business strictly, and seem pretty busy at it. As will be noted from the detailed record of the past week's dumping an increase is shown. This bids fair to keep up this week and the total of the month should be large.

Some improvement is noticed in the matter of obtaining bunker and export licenses. The delay is not so great as heretofore and it is understood that the Bureau of Export Licenses works 24 hours per day.

Dumpings for the past week were:

	Week Ending Sept. 8
Virginia Railway.....	101,412 gross tons
Norfolk & Western Railway.....	116,901 gross tons
Chesapeake & Ohio Railway.....	

COASTWISE FREIGHTS

Practically no charters are heard of from Hampton Roads to Boston, the peculiar state of the coal market being a controlling condition. Two dollars and fifty cents is still quoted, but except for a few barges the rate is only nominal.

On Long Island Sound, New York loading rates are \$1.25@1.35 to Providence and \$1.40@1.50 to New Bedford. To East-west Maine points \$3 is again the going freight.

Lake Markets

PITTSBURGH

No market developments, sales at the \$2 basis remaining insignificant. Reports are that production is decreasing. Some wagon mines are reopening.

The coal market has not developed to any extent since last report. There is no regular trading on the \$2 basis, to the extent of any material tonnage. Operators insist that production is decreasing because there are mines that cannot produce on the \$2 basis, while it appears that the mines that have a lower cost are shipping all their output on contracts, leaving nothing to be offered in the market.

No information is available as to what representations are being made to the coal-control authorities at Washington on behalf of the operators. It is stated, however, that many operators are suggesting to those who inquire for coal and are turned down, that they write to Dr. Garfield relating the circumstances.

Shipments in the Lake trade have been heavy since the priority order went into

effect and the railroads are giving the movement excellent dispatch.

Some of the steel mills have been complaining loudly of their inability to buy coal in the market and assert that they are going to lose production. Some reports are already in circulation of steel output being reduced, particularly in the Youngstown district, on account of coal shortage, but these reports seem to be premature. In a number of cases mills have stock piles, accumulated against trouble in the winter, and these stock piles would be taken before operations were curtailed.

We quote the market, such as there is, at the fixed prices, \$1.75 for slack, \$2 for mine-run and \$2.25 for sized coal, per net ton at mine, Pittsburgh district, with 15c. additional in case sales are made by brokers.

It is understood some of the wagon mines are now operating on the basis of selling coal at \$2 at the mine and charging various prices, averaging \$2 or more, for hauling the coal to railroads. The supply of cars, however, is quite limited.

BUFFALO

No change in the bituminous situation. Jobbers still waiting to see what the mine owners do. All coal moves on contract, with no prospect of coming down. Anthracite moving fast. Local trade easier.

Bituminous—Nobody is yet willing to sell coal for \$2 or near it. The way the price is avoided is to turn the entire output in on contracts and allow the consumer, who has no previous agreement, to go without any. It has been found entirely impossible to get a ton of coal for such members of the trade so far. Even when there is complaint that the supply is giving out the coal is not forthcoming. The uniform reply of the operators is that they have contracts enough to take their whole output and they have nothing to sell. Some of the smaller operators have closed down, on the claim that they are not able to run at a profit at present prices. Jobbers agree that they are right.

This leaves the jobbers nothing to do but to look after such contracts as they have and stand off all orders for uncontracted coal. They do not feel like taking any chances on selling at higher prices, even if they could get a supply. They entirely agree with the operators that the price is too low.

There is complaint of car shortage and lack of labor still, but all this is pretty nearly a lost issue in view of the problem of prices. It is generally believed that the Government will have to increase its price before the situation will clear up. Then if operators suddenly find they have free coal to sell it may look peculiar.

It may still be profitable to show what the Buffalo price of bituminous would be if operators would sell it at the regulation price. This is as follows, per net ton, f.o.b.:

	Slack	Lump
Pittsburgh (rail rate).....	\$3.30	\$3.80
Bessemer (rail rate).....	3.20	3.70
Allegheny Valley (rail rate).....	3.15	3.65

Anthracite—The local trade is tranquil. There are consumers who claim they are not getting any coal but the fact remains that more has been distributed through the city than ever before during the summer season. Some heavy dealers say their books show about 40 per cent. more than last season since April and they feel that there is no reason to be disturbed. The city will be well taken care of, as it always has been.

At the same time the city shippers are besieged every day by Western and Canadian retailers, complaining that they have no coal and are afraid the winter will find them unable to meet the demand. The situation is perplexing, for more coal has also been shipped into that territory this summer than in former seasons and of course the consumers have it. They would mostly take twice what they have and clamor for more, so convinced are they that there is going to be a shortage next winter.

The fixing of certain anthracite prices lately has made no difference. The idea is that there is to be a shortage and nobody can convince buyers to the contrary. Retailers are also aware that they could increase their sales just as far as they could get coal, so they are doing what they can to get more.

Anthracite shipments by Lake are liberal, being as follows for the week without the Canadian report, which is withheld: 47,700 tons to Chicago; 16,700 tons to Milwaukee; 13,260 tons to Green Bay; 1000 tons to Depere and 77,700 tons to Duluth and Superior.

Freight rates remain at \$1.25 to Depere, 75 cents to Green Bay, 60 cents to Chicago, 60 cents to Milwaukee and 45 cents to Duluth.

CLEVELAND

Lake shipments increasing. Decrease in eastern Ohio production.

The Federal Government's order giving preference to Lake shipments has greatly increased these shipments and the tonnage loaded for the Northwest. Last week was the largest of any week since the establishment of the Lake Erie Bituminous Coal Exchange. It is hoped these conditions will prevail till close of navigation as it is reported that the Northwestern coal docks were over 900,000 tons short on Aug. 1, as compared with Aug. 1, 1916.

During the month of August 4,300,000 tons of bituminous coal was shipped to the Northwest. This is 80,000 tons more than was ever shipped in any one month before.

For the month of August the Pittsburgh No. 8 district in eastern Ohio produced 1,017,995 tons. This is a decrease of about 100,000 tons as compared with August, 1916.

TOLEDO

All users of steam coal, and the majority of the dealers, are scouring the market in an effort to place orders for fuel in any amounts. Most mines are reported sold up to capacity.

Buying in all departments of the coal trade is at a standstill, but not because of a lack of interest on the part of the buyers. Wholesalers in this city, for the most part, are not accepting orders for immediate delivery. The scarcity of cars, labor and motive power is given as the main reason why orders can not be handled as effectively as a month ago.

Some coal is arriving, but the amount is negligible when compared to the greatly advanced demands being made upon the wholesalers this year. Every factory in this city is using more coal by a wide margin than it did last year.

The Lake trade is in the midst of an activity never experienced before. As a result of the recent Government order to help solve the problem of distributing coal in the Northwest, several vessels engaged in the ore trade, which were returning to Duluth without a cargo, were stopped in the Detroit River by Government officials and ordered to return to Toledo and secure a cargo of coal.

No vessels are leaving this port without a load of coal for the Upper Lakes. A local dock which had been handling on an average of 800 cars of coal per day, is now dumping over 950 cars into the holds of the carriers. Other docks have been speeded up and are handling about a third more cars every day than they were during the summer months. Freighters are taking an average of 11,000 tons of coal as a cargo, and the railroads are hard put to it to supply the docks with sufficient coal to load the ships.

Prices per ton, f.o.b. mines, are as follows:

	Mine-Run	Lump and Egg	Nut and Slack
Hocking and Pomeroy.....	\$2.00@2.35	\$2.25@2.60	\$1.75@2.10
Kentucky.....	1.95@2.40	2.30@2.65	1.70@2.15
Pocahontas.....	2.00	2.25	1.75
West Virginia splint.....	2.00	2.25	1.75

DETROIT

Little or no free coal is to be found in the market. Anthracite receipts continue light. Shipments by Lake gain in volume.

Bituminous—With demand for steam coal moderately active and coming from consumers who expect to supply their requirements at the prices fixed by the Government, wholesalers and jobbers say almost no free coal is to be had in the local market. The explanation is offered that producers of bituminous coal are finding themselves unable to turn out a quantity much in excess of the amount covered by contracts which they had taken prior to the date when the Government prices were announced. The producers, it is said, are obliged to exert vigorous effort in order to get out sufficient coal to fill contracts, which for the most part were booked at prices materially higher than those later put in effect by the Government.

Anthracite—Retail dealers are receiving only small quantities of anthracite and their efforts to obtain a more liberal allotment are said to be meeting with little success. Many of the consumers, who have not already given their order, are reported to be holding back, evidently with the belief that they will derive some advantage from the prospective fixing of retail prices by the Government. It is feared by some of the dealers that the result of this delay will be a releasing of so large a volume of business later that stocks on hand and delivery facilities will be unable to take care of all customers in a satisfactory manner.

Lake Trade—Considerable improvement is reported in the movement of coal to loading docks on the Lakes, this being largely the result of Government action requiring the railroads to turn over all suitable available cars to be loaded with Lake coal. The Lake Erie Coal Exchange is now offering a rate of 50c. to ports at the head of Lake Superior and 75c. to Lake Michigan ports. Delays imposed on ore carriers by car shortage at unloading ports is having the effect of shortening the available supply of vessel tonnage for handling coal shipments.

COLUMBUS

The Ohio market is still in an unsettled state. There is little free coal on the market and operators are generally refusing orders. The Lake traffic is taking all available tonnage.

Uncertainty still characterizes the coal trade in Ohio. Operators, jobbers and retailers are at a loss how to proceed and as a result a large majority are doing little. The "provisional" prices fixed at Washington still maintain but it is generally believed that higher prices will be allowed and consequently operators and jobbers are waiting to see which way the market turns. The Lake trade is active and there is also a good steam demand. Domestic coal is quiet.

Production has been slightly better during the past week. Certain railroad embargoes have had the effect of curtailing the output and there are quite a few complaints of actual shortage of equipment. Labor troubles have been settled to a certain extent although some districts still have mines idle because of labor difficulties. It is estimated that the Hocking Valley is producing about 75 per cent. of normal. Eastern Ohio is credited with 65 per cent. and other fields are producing around 75 per cent.

Prices on short tons f.o.b. mines are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump.....	\$2 25	\$2 25	
Inch and a quarter.....	2 25	2 25	\$2 25
Three-quarter inch.....	2 25	2 25	2 25
Nut.....	2 25	2 25	2 25
Egg.....	2 25	2 25	
Mine run.....	2 00	2 00	2 00
Nut, pea and slack.....	1 75	1 75	1 75
Coarse slack.....	1 75	1 75	1 75

LOUISVILLE

Market continues much disorganized pending definite application of Government schedule. Industrial demand brisk but domestic consumers almost unanimously await lower prices.

A most unsatisfactory condition continues in this market, with much uncertainty as to the course prices will take. Industrial consumers are buying readily and southeastern Kentucky coals are selling readily at the Jellico levels, where any are to be delivered. Some of the western Kentucky operators have announced that they will sell coal on the \$1.70@2.20 basis, those which have agencies making no charge for sales. There is, however, almost no coal for sale at this price and the movement throughout this territory for the most part is on old contracts or on formerly placed orders.

The domestic trade is dull. One Louisville dealer has cut the price 50c. on the ton and another 10c., but as a rule inquiries of the retail dealers as to when the prices will come down are answered with an "Ask 'Doctor' Garfield."

The strike in southeastern-Kentucky and Tennessee, continues with practically no change, no important operations having made terms. What promised to be a settlement failed to get that far but it is reported that another week will see a settlement on a basis approximately like that of the "Alabama plan."

BIRMINGHAM

Demand strong with practically no coal available to meet it. Coal Operators' Association ratifies Commissioner Wilson's peace proposal. Miners' Union fails to take action and sends committee to Washington to place grievances before Dr. Garfield and other government officials. No strike without sanction of national union officials. Strong spot demand for coal, with production not adequate to care for existing contracts.

During the week the Coal Operators' Association met, and though not officially confirmed, it is understood unanimously ratified Commissioner Wilson's peace proposal, while the Miners' Union, District No. 20, after a stormy three-day session, failed to take action on the conciliatory agreement and appointed a committee to go to Washington and appear before Dr. Garfield and other government officials with

certain of their grievances and report back to a later convention. It was agreed that no strike would be called at this time or later without the sanction of the national officials of the union.

Operating conditions during the last week have been especially unsatisfactory, few, if any, mines having normal crews, and production at the commercial mines has ranged from 50 to 75 per cent. normal, furnace companies making a slightly better showing. It is reported that the output has not been sufficient to meet the stipulated requirements of contract business, therefore there has been practically no coal to meet the spot inquiry, which has strengthened considerably.

Following the definite fixing of mine prices by the coal administrator it is expected that a schedule for the retailer will be announced. In the meantime this individual is very much up in the air. Some yards have high-priced coal on their hands and more to come, while the householder is refraining from purchasing his winter supply, with the assurance of getting his coal in some instances at less than cost at the mines, if the supply is sufficient for him to get any at all.

Coke

CONNELLVILLE

Active market continues with no general price trend. Price fixing by Government still expected. Production and shipments decrease.

The spot-coke market continues active, there being heavy demand from various quarters. As some buyers disappear from the market others are developed, and the volume of demand keeps up to a fairly uniform average. Not so with prices, however, which fluctuate from day to day, frequently by more than 50c. a ton. Late last week the market stiffened but at this writing it is back to the level of a week ago.

There is no news on the Government's price-fixing program. The trade still believes that the Government will fix prices on coke, but the only explanation for the delay is that the fixing of coal prices has raised so much protest that time is being taken to give the subject of coke prices more consideration. It is possible that there is a hint as to what the Government will expect, in the matter of coke prices to the general trade, in the prices at which coke for the Navy Department was recently allotted. There was 16,000 tons distributed to Connellsville and West Virginia operators, for shipment through next June, at \$3 for heating grade and \$3.50 for foundry grade, only about 1000 tons of the lower grade being required. The operators consider the prices very low, but as the tonnage is insignificant no complaint is being made.

Despite fluctuations meanwhile, we quote prices the same as one week ago, \$13@13.50 for spot furnace and \$13.50@14 for spot foundry, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Sept. 1 at 336,170 tons, a decrease of 22,334 tons, and shipments at 337,299 tons, a decrease of 26,220 tons.

Some coke operators have been offering sliding-scale contracts on coke for the first half or all of next year; the coke price to be fixed monthly in accordance with the market price of pig iron. The object of furnaces in buying at this time would be to secure assurance of a regular supply in case the Government fixes the Pennsylvania market price at a low level.

Buffalo—The prospect of a regulation price being placed on coke at the ovens is said not to be as good as it was and prices remain strong on the basis of \$15.50 for 72-hr. Connellsville foundry, \$15 for 48-hr. furnace and \$13 for low grades. Lake receipts of iron ore at this port continue heavy, being 259,476 gross tons for the week. Unloading delays are small here, as compared with other Lake Erie ports. It is reported by vessel owners that the fleet will not be able to carry the amount of ore this season that was specified and the closing will have to be late if approximately this amount is moved.

Birmingham—The only change noted in the coke situation the last week is a further restricted production. Furnace companies have experienced difficulty in securing sufficient stocks to keep their stacks going, production being badly crippled by the curtailment of the coal supply. Foundry coke is very scarce, with no change in prices, spot ranging from \$14.50 to \$16.50 per net ton, ovens.

Middle Western

GENERAL REVIEW

Shortage of cars and labor becoming acute. Embargoes on Eastern roads interfering with shipments moving to the western market. Retailers are heavy purchasers.

Due to the continued shortage of cars throughout the Eastern fields, especially that part of West Virginia and eastern Kentucky that ship more or less coal to the Mid-west territory, little tonnage movement from these fields has reached this market, and the railroads are making little headway moving loaded cars due to a shortage of motive power. The suspension of operations on account of strikes at a number of the Kentucky mines is also interfering with shipments. The supply of empties for loading at the Indiana mines the past week was unusually poor and mines that are served by one railroad only operated less than half time. Illinois mines were more fortunate in this respect—in the southern part of the state more time was lost on account of shortage of labor and mine disability than for cars.

Shipments via the Great Lakes has shown an improvement, and receipts at the docks at the head of the Lakes were heavier the past week than for any one week heretofore this season. Duluth anthracite receipts this year show a gain of 165,590 tons over the same period last year, while bituminous receipts compared to last year have declined 736,200 tons. At the Ashland docks the receipts have fallen off about 30 per cent. compared to last year.

The United Mine Workers of America headed by John P. White, conferred the past week with operators of the four states, Pennsylvania, Ohio, Indiana and Illinois relative to a new schedule of wages for the miners. At the request of Dr. Garfield, the matter is to be held in abeyance until such time as Dr. Garfield can complete his advisory organization.

The operators will not oppose another advance to the miners providing the government will say in advance that the increase shall be absorbed by the public. An increase at this time will no doubt be an incentive to the average miner to retain his position, and enable him to meet the continuous increases in the cost of living.

Shippers of Indiana and Illinois coals have been flooded with orders the past week—most of the business coming from the retailers who are coming into the market strongly and evidently making an effort to place sufficient orders to offset their lack of buying earlier in the summer.

Considering the proposition broadly the coal situation is in a dangerous predicament, and it is extremely doubtful if there will be enough coal to satisfy the demands of all the users of fuel three months hence.

CHICAGO

The Chicago market is confronted with a serious shortage of Pocahontas and other high-grade coals. Indiana mines operating at less than half time because of car shortage. Southern Illinois mines operating about 75 per cent. of full time.

Shipments of West Virginia coals to the Chicago market have been almost at a standstill the past week. This is occasioned by embargoes on the Norfolk & Western, also the fact that this road seems unable to provide enough locomotives to handle loaded coal cars. Retail dealers are unable to secure Pocahontas in sufficient quantities to satisfy consumers—the latter having come into the market more strongly the past week than at any time since last winter.

There is also a shortage of anthracite in the domestic market. Householders are trying to get coal but find deliveries are slow, and in a number of instances they are substituting other coals for anthracite—dealers being six to eight weeks behind on this grade and making little promise of a supply later.

There has been a noticeable increase in the shortage of cars at the Indiana mines due to the priority order issued by Judge Robert Lovett. Federal dictator of freight shipments, which was interpreted to mean that the Pennsylvania Lines in Indiana would have to divert all of their coal cars to Lake ports for Northwest shipments until the close of navigation. This will seriously affect Knox County mines, also handicap the movement to Indianapolis of coal shipments from Sullivan, Vigo and Greene Counties.

Indiana shippers have an overabundance of orders especially for the steam trade, and claim that householders have not as yet woken up to the fact that prices are now

as low as if not lower than they will be any time during the coming winter.

Except for a shortage of labor the mines in the Fulton and Peoria county fields have operated at about full time. Shippers in this district are flooded with orders and most of the mines are booked up for six to eight weeks. Because the new schedule of prices are less than the total cost of operating including all overhead expense, desperate efforts are being made by the operators to secure permission from Dr. Garfield to increase these prices. If this permission is not secured at an early date some of the smaller mines will be compelled to cease operations.

The Peoples Coal Mine, Lebanon, Ill., and the McLean County Coal Co., Bloomington, Ill., have closed down until such time as the Government grants permission for them to increase prices sufficiently to operate at a profit. The latter mine produces about 60,000 tons yearly, and it is claimed that the cost exceeds the sale price, 19c. per ton.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Williamson and Franklin County	Saline and Harrisburg
Steam lump.....	\$2.20@2.35	\$2.20@2.35
Domestic lump.....	2.20@2.35	2.20@2.35
Egg or furnace.....	2.20@2.35	2.20@2.35
Sm'l egg or nut.....	2.20@2.35	2.20@2.35
Stove.....	2.20@2.35	2.20@2.35
Chestnut.....	2.20@2.35	2.20@2.35
Pea.....	2.20@2.35	2.20@2.35
Washed egg.....	2.20@2.35	2.20@2.35
Washed stove.....	2.20@2.35	2.20@2.35
Washed nut.....	2.20@2.35	2.20@2.35
Mine-run.....	1.95@2.10	1.95@2.10
Screenings.....	1.70@1.85	1.70@1.85
Washed slack.....	1.70@1.85	1.70@1.85

	Clinton and Sullivan	Knox and Greene	Eastern Kentucky
Dom. lump.....	\$2.20@2.35	\$2.20@2.35	\$2.65@2.80
Steam lump.....	2.20@2.35	2.20@2.35	2.65@2.80
Egg.....	2.20@2.35	2.20@2.35	2.65@2.80
Sm'l egg or nut.....	2.20@2.35	2.20@2.35	2.65@2.80
Mine-run.....	1.95@2.10	1.95@2.10	2.40@2.55
Screenings.....	1.70@1.85	1.70@1.85	2.15@2.30

MILWAUKEE

Anthracite grades advanced 10c. per ton. Fuel Board of the County Council of Defense finds that present rates on coal at Milwaukee are not unfairly high.

Milwaukee will have sufficient coal to last through the coming winter if the present rate of receipts are kept up, but there will be little chance of a reduction in the price of anthracite. This is the judgment of the Fuel Board of the Milwaukee County Council of Defense, in its report to the public. The report adds, however, that it may be found necessary to substitute a certain amount of soft coal for hard.

The Board's findings, in brief, are that present prices of anthracite coal in Milwaukee are not unfairly high considering the President's mine prices and the cost of transportation and handling; that while the average advance in the price of anthracite is but 12 1/2 per cent. over last year, general commodity prices have advanced 50 per cent.; that prices of the various grades of anthracite to Milwaukee consumers should be: Egg, \$9.20; stove, \$9.42; nut, \$9.52, with an additional charge of 50c. per ton for carrying coal into bins.

There is naturally some criticism of the Board's conclusions, the admission that out of \$10.02, the total cost of a ton of chestnut coal put in the bin at Milwaukee, \$3.62 is exacted after the coal reaches the dock in this city, being the disturbing point.

A report on the coal situation throughout the state is expected shortly from W. N. Fitzgerald, who was designated by Governor Philipp to investigate conditions, both as to supply and cost to consumer.

Anthracite grades of coal were advanced 0c. per ton at Milwaukee on the 1st of September. Rates on soft coal were not changed.

Coal has been arriving more freely of late. Since the opening of navigation up to and including Sept. 10, the receipts of hard coal aggregate 549,500 tons, or 16,034 tons more than was received during the same time last year. The average receipts during the same period for the past four years have been 591,661 tons. The receipts of soft coal up to the same date this year aggregate 1,918,664 tons, against 2,515,105 tons during the same period last year, a falling off of 596,441 tons. This shortage can be largely made up if receipts continue as they are at present.

Fires caused by spontaneous combustion are occurring daily at the different coal docks and yards throughout the city where stocks of bituminous coal are stored. Soft

coal has accumulated to some extent because orders from the interior are being held up pending the price controversy.

ST. LOUIS

Market shows considerable improvement, especially in steam sizes. Domestic market extremely good on high grade. Standard dragging a trifle. Car supply shows considerable improvement. No Eastern coals. Retail market uncertain.

The St. Louis market shows a wonderful development in the past week on steam sizes. It is almost impossible at this time to get steam coal from the high grade field and everything that is offered from the Standard field is readily taken.

The principal cause of the shortage of steam coals is on account of the operators being able to get a domestic price for No. 1, 2 and 3 sizes of nut, leaving only the No. 5 for steam. Mine run, however, is not in demand.

In the high grade field several mines were being sold up rapidly on lump and egg. The country demand has been ex-

	Fulton and Peoria	Springfield	Carterville	Grundy, La- Salle, Bureau and Will
Steam lump.....	\$2.20@2.35	\$2.20@2.35	\$2.20@2.35	\$2.65@2.80
Domestic lump.....	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Egg or furnace.....	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Sm'l egg or nut.....	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Stove.....	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Chestnut.....	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Pea.....	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Washed egg.....	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Washed stove.....	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Washed nut.....	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Mine-run.....	1.95@2.10	1.95@2.10	1.95@2.10	2.40@2.55
Screenings.....	1.70@1.85	1.70@1.85	1.70@1.85	2.15@2.30
Washed slack.....	1.70@1.85	1.70@1.85	1.70@1.85	2.15@2.30

Smokeless

	Pocah, and W. Va.	Penna.	Hocking	West Va. Splint
Dom. lump.....	\$2.25@2.40	\$2.25@2.40	\$2.60@2.75	\$2.40@2.55
Steam lump.....	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Egg.....	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Sm'l egg or nut.....	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Mine-run.....	2.00@2.15	2.00@2.15	2.35@2.50	2.15@2.30
Screenings.....	1.75@1.90	1.75@1.90	2.10@2.25	1.90@2.05

cellent, although the city call is not good. Country shipments now mean that cars will not return as quickly as when shipped to the city, and it is well that the country demand is good right now, for the car supply is better than it has been any time since last spring.

On several roads this week mines have worked as many as five days, and the Illinois Central shows up better in the way of improvement than any other road.

There is everything to indicate that the consumer will have to resort to buying the cheaper coals at even the same price as high grade, for the high grade is being sold up so rapidly that there will be no chance of taking care of the large volume of business offered from now on. There is no scarcity of coal, however, and there is no indication that there will be a scarcity.

In the Mt. Olive field the mines are trying to fill orders that they have had for several weeks, and the railroad tonnage continues heavy. Good working time continues, with plenty of cars.

In the Standard field lump sizes are a little slow, while steam is exceptionally good. Lump and egg in the Standard field will continue slow until the tonnage offered in high grade is taken up, when the public will have to resort to the Standard qualities.

Good working time continues in this field, with plenty of equipment. There are some minor labor troubles that have shut down operations for a week or two at a time, but they are not important.

In the Carterville field some of the washers have been obliged to suspend operations, and others have been hauling water for the washers on account of no rain.

During the past week some anthracite moved in, but not any heavy tonnage, also a little smokeless. Nothing from the Arkansas field is coming in, and the understanding is that several of the mines

there are closed down on account of not being able to produce coal at a profit at the Government price.

The prevailing market here per net ton f.o.b. mine is:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump.....	\$2.20@2.35	\$2.20@2.35	\$2.20@2.35
3x6-in. egg.....	2.20@2.35	2.20@2.35	2.20@2.35
2x3-in. nut.....	2.20@2.35	2.20@2.35	2.20@2.35
No. 2 nut.....	2.20@2.35	2.20@2.35	2.20@2.35
No. 3 nut.....	2.20@2.35	2.20@2.35	2.20@2.35
No. 4 nut.....	2.20@2.35	2.20@2.35	2.20@2.35
No. 5 nut.....	1.70@1.85	1.70@1.85	1.70@1.85
2-in. segs.....	1.70@1.85	1.70@1.85	1.70@1.85
2-in. lump.....	2.20@2.35	2.20@2.35	2.20@2.35
3-in. lump.....	2.20@2.35	2.20@2.35	2.20@2.35
Steam egg.....	2.20@2.35	2.20@2.35	2.20@2.35
Mine run.....	1.95@2.10	1.95@2.10	1.95@2.10

Washed:

No. 1.....	2.20@2.35	\$2.20@2.35
No. 2.....	2.20@2.35	2.20@2.35
No. 3.....	2.20@2.35	2.20@2.35
No. 4.....	2.20@2.35	2.20@2.35
No. 5.....	1.70@1.85	1.70@1.85

Williamson & Franklin Co., rate 87 1/2 c.; other fields, 72 1/2 c.

Foreign Markets

Reported by Hull, Blyth & Co., of London and Cardiff

Aug. 23 Coal—Very little business doing other than that controlled by the authorities. Shipments temporarily suspended at Barry, owing to a strike of tipplers.

Best Welsh steam.....	\$8.02
Best seconds.....	7.66
Seconds.....	7.48
Best dry coals.....	7.30
Best Monmouthshires.....	7.30
Seconds.....	7.06
Best Cardiff smalls.....	5.60
Cargo smalls.....	4.86

The prices for Cardiff coals are f.o.b. Cardiff. Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—Numerous inquiries but little business doing, owing to lack of boats.

Gibraltar.....	\$21.20	Port Said.....	\$40.09
Marseilles.....	21.78	Las Palmas.....	18.22
Genoa.....	24.60	St. Vincent.....	19.45
Naples.....	23.86	River Plate.....	27.32
Alexandria.....	42.50		

Production and Transportation Statistics

ANTHRACITE SHIPMENTS IN AUGUST

The shipments of anthracite for the month of August, 1917, as reported to the Anthracite Bureau of Information at Wilkes-Barre, Penn., amounted to 7,013,996 tons. This is the second time in the history of anthracite mining, that the shipments in any one month exceeded 7,000,000 tons. The August figures are within 35,041 tons of reaching the high water mark made in June of this year.

Compared with July, the shipments of last month show an increase of 289,744 tons, and exceed the shipments of August, 1916, by 1,482,199 tons. The shipments for the eight months of 1917 amounted to 51,405,341 tons, an increase of 7,019,001 tons, or almost 16 per cent. over the corresponding period of last year. The total shipments to date are 1,474,925 tons in excess of the tonnage shipped in the first nine months of 1916.

Distributed by carrier companies the shipments during August, 1917, were as follows:

	August, 1917	August, 1916	Year, 1917	Year, 1916
P. & R. Ry.....	1,373,473	1,000,667	9,807,697	8,323,401
L. V. R.R.....	1,245,786	1,026,074	9,242,429	7,882,686
C. R.R. of N. J.....	753,197	595,053	5,563,372	4,674,573
D. L. & W. R.R.....	1,118,986	875,131	8,804,820	6,826,773
D. & H. Co.....	781,606	572,822	5,650,941	4,733,883
Penna. R.R.....	504,819	482,416	3,851,993	3,992,368
Erie R.R.....	812,114	658,044	5,951,835	5,290,624
N. Y. O. & W. Ry.....	186,679	184,708	1,356,006	1,328,146
L. & N. E. R.R.....	392,643	190,779	2,562,352	1,570,609
	7,169,303	5,585,694	52,291,445	44,623,063
* Deduction.....	*155,307	*53,897	*886,104	*236,723
	7,013,996	5,531,797	51,405,341	44,386,340

* Deduction: Tonnage reported by both C.R.R. of N.J. and L. & N. E. R.R.